



TAMPERE UNIVERSITY OF TECHNOLOGY

**MIKHAIL TULIN**

**REACHING COST VISIBILITY INTO SUBSIDIARY DISTRIBUTION**

Master of Science Thesis

Prof. Miia Martinsuo and Dr. Jouni Lyly-Yrjänäinen have been appointed as the examiners at the Council Meeting of the Faculty of Business and Technology Management on October 3, 2012.

# ABSTRACT

TAMPERE UNIVERSITY OF TECHNOLOGY

Master's Degree Programme in Business and Technology

TULIN, MIKHAIL: Reaching Cost Visibility Into Subsidiary Distribution

Master of Science Thesis, 106 pages, 4 appendices (5 pages)

January 2013

Major: Managing Technology-Driven Businesses in Global B2B Markets

Examiners: Professor Miia Martinsuo, Doctor Jouni Lyly-Yrjänäinen

Keywords: Supply chain visibility, costing, subsidiary, logistics, distribution, transportation, cost database

Foreign subsidiaries are business units within multinational companies operating under control of parent organizations. Subsidiaries possess distinct arrays of information that oftentimes happen to be out of the parent's reach. Visibility into subsidiary operations is nowadays becoming more of a need than a luxury. Distribution, representing activities needed to deliver finished products from the end of production to customers, as well as the costs related to distribution are among the many areas of subsidiary's business operations that oftentimes are not thoroughly visible to the parent organization.

This study is based on the assignment of the case company and the objective is to develop a tool for parent organization that would enable cost visibility into distribution of its foreign subsidiary. The objective is achieved by creation of the subsidiary distribution cost database, the use of which provides valuable cost information on subsidiary's distribution and, consequently, facilitates the attainment of cost visibility into subsidiary distribution.

In order to address the problem, based on the reviewed literature, certain conceptual framework is developed and applied to a real case. In terms of research methodology, this study utilizes the research of empirical type with the purpose of theory and application. Moreover, case study research strategy is followed and such data generation methods as the use of existing materials, interviewing and action science are exploited.

In the result of this study, the case company receives a valuable tool eliminating uncertainty of subsidiary's distribution as well as providing traceability of subsidiary's transportation costs. Case company reinforces its parental control and enriches the ability to evaluate subsidiary's performance taking into account the actual costs of transportation. The study provides the basis for cost-efficient adjustment of subsidiary's distribution strategy as well as optimization of related business processes.

## PREFACE

This study was conducted on the assignment of Kiilto Oy. The objective was to develop a tool for parent organization that would enable cost visibility into distribution of its foreign subsidiary. In pursuit of such cost visibility the study developed a subsidiary distribution cost database, the use of which provided valuable cost information on subsidiary's distribution.

The study was done with the help of many people. First of all, I would like to thank Dr. Jouni Lyly-Yrjänäinen for his unquenchable support, motivation and inestimable contribution to the research process and to my own learning. Second, I would like to thank Prof. Miia Martinsuo for valuable comments, advices and revisions. Third, I am glad to express my sincere gratitude to the management of Kiilto Oy and especially Dr. Mikko Viljanmaa, whose guidance, remarks and feedback were steady giving me the lead. Finally, I would like to show my appreciation to all other employees of Kiilto Oy and Kiilto-Klei, with whom I had an honor to get acquainted and work throughout the project. Special thanks are delivered here to Jaakko Koivunen, Pavel Slobodyan and Alexey Tchickshin.

I express exceptional acknowledgement to my loving mother, whose support was so crucial in achieving everything that I have in my life.

Tampere, January 2013

---

Mikhail Tulin

# TABLE OF CONTENTS

<b>ABSTRACT .....</b>	<b>i</b>
<b>PREFACE .....</b>	<b>ii</b>
<b>TABLE OF CONTENTS.....</b>	<b>iii</b>
<b>ABBREVIATIONS.....</b>	<b>vi</b>
<b>1. INTRODUCTION.....</b>	<b>1</b>
1.1. Background .....	1
1.2. Problem of the study.....	2
1.3. Objectives of the study .....	2
1.4. Overview of the case company.....	3
1.5. Thesis disposition .....	5
<b>2. LITERATURE REVIEW.....</b>	<b>6</b>
2.1. Distribution.....	6
2.1.1. Logistics vs. supply chain management .....	6
2.1.2. Distribution as a part of logistics.....	10
2.1.3. Evolution of distribution from company perspective.....	13
2.2. Visibility.....	16
2.2.1. Information visibility in business .....	16
2.2.2. Supply chain visibility.....	17
2.2.3. Supply chain visibility frameworks .....	20
2.3. Costing .....	24
2.3.1. Costing and cost information .....	24

2.3.2. Logistics and distribution costs .....	28
2.3.3. Cost database .....	31
2.4. Subsidiary .....	35
2.4.1. Defining subsidiary .....	35
2.4.2. Parent-subsidiary relationships .....	37
2.4.3. Visibility into subsidiary operations .....	39
2.5. Cost visibility into subsidiary distribution .....	42
<b>3. RESEARCH METHODOLOGY .....</b>	<b>46</b>
3.1. Research design .....	47
3.1.1. Research type .....	47
3.1.2. Research purpose .....	48
3.1.3. Research strategy .....	49
3.2. Data collection .....	51
3.2.1. Methods of data collection .....	51
3.2.2. Methods of data collection used .....	52
3.2.3. Collected data .....	53
3.3. Research process .....	54
3.4. Research evaluation .....	57
3.4.1. Importance of the research .....	58
3.4.2. Research obstacles and sources of possible errors .....	58
3.4.3. Validity and reliability .....	58
<b>4. CASE: KIILTO OY .....</b>	<b>60</b>
4.1. Kiilto Oy as multinational company .....	61
4.1.1. Kiilto Oy as the member of Kiilto Family .....	61

4.1.2. Kiilto Oy and its Russian subsidiary.....	63
4.2. Describing distribution of Kiilto-Klei .....	66
4.2.1. Distribution of Kiilto-Klei.....	66
4.2.2. Describing distribution pattern of Kiilto-Klei .....	68
4.2.3. Modeling distribution network of Kiilto-Klei .....	70
4.3. Distribution cost database of Kiilto-Klei.....	71
4.3.1. Focus on transportation costs .....	72
4.3.2. Building subsidiary distribution cost database .....	76
4.3.3. Levels of subsidiary distribution cost database .....	78
4.4. Using distribution cost database of Kiilto-Klei .....	80
4.4.1. General level analysis of Kiilto-Klei's transportation costs.....	81
4.4.2. Customer level analysis of Kiilto-Klei's transportation costs...	83
4.4.3. Product level analysis of Kiilto-Klei's transportation costs .....	84
4.5. Reached cost visibility into distribution of Kiilto-Klei .....	86
<b>5. DISCUSSION.....</b>	<b>90</b>
5.1. Analysis of the results.....	90
5.2. Reflection to the literature.....	91
5.3. Limitations of the study .....	94
5.4. Future research and management implications .....	94
<b>6. CONCLUSION .....</b>	<b>96</b>
<b>REFERENCES.....</b>	<b>97</b>
<b>APPENDICIES (4 pieces).....</b>	<b>107</b>

## ABBREVIATIONS

ABC	Activity-based costing
EXW	Ex-works
IS	Information system
LSP	Logistics service provider
MNC	Multinational company
SCM	Supply chain management
SCV	Supply chain visibility

# 1. INTRODUCTION

## 1.1. Background

Multinational company (MNC) is any company that is engaged in business operations beyond its domestic borders (Cullen & Parboteeah, 2008). MNC normally consists of a parent organization and a number of subsidiaries abroad (Dura & Dobre-Baron, 2011). As distinct from multinational corporations, multinational companies are not necessarily publicly owned through stocks (Cullen & Parboteeah, 2008) and practically can even be small- or medium-sized family-owned private businesses. MNCs are operating within complicated, intricate and heterogeneous sets of business environments (Mahlendorf et al., 2012) and are constantly challenged by the complexity of markets, differences in cultures and issues caused by geographical distances.

Foreign subsidiaries, being essential attribute of modern MNCs, are business entities functioning under the patronage of parent organizations. Parent-subsidiary relationship can never be a straightforward one (Birkinshaw et al., 2000). The role played by foreign subsidiaries in the networks of modern MNCs has lately received a great attention in the literature (Harzing & Noorderhaven, 2006). On the whole, opinions towards high importance of subsidiaries for MNCs as well as the strong need for efficient subsidiary management have reached a consensus (Birkinshaw & Pedersen, 2009).

Accordingly, the perception of foreign subsidiary as a part of MNC has gradually shifted from treating subsidiary as an ordinary and petty cost contributor to the appraisable high value creator (Muringaseril, 2007). In the latter treatment foreign subsidiary indeed deserves significant attention from the side of parent organization, its constant support, management and control. Nevertheless, efficient parental management and control is only made possible by decreasing uncertainty through attaining the high extent of visibility into subsidiary operations.

As a general rule, there appears to be a continuous misalignment of perception in-between the parent and its subsidiary: where subsidiary seeks autonomy, parent seeks for control; where subsidiary chases own interests, parent concerns about the interests of MNC (Ameguide, 2009). Such misalignment could potentially prevent parent organizations from maintaining sufficient visibility into their subsidiary operations, negatively influencing controlling ability and decision-making. Therefore, parent organizations are constantly pursuing sufficient and adequate information sharing provided by their subsidiaries. However, reaching the sufficient extent of visibility at parental level of MNC is usually claimed to be a real challenge (Zelinger, 2011).



Efficient information sharing within the MNC is stated to be vital (Piscitello & Rabbiosi, 2006), implying the visibility of information among the company's units. Operating under control of parent organization, subsidiaries possess distinct arrays of information that oftentimes happen to be out of the parent's reach. As a matter of fact, information on subsidiary's distribution and distribution costs is not an exception.

Indeed, distribution, representing activities needed to deliver finished products from the end of production to the customer, as well as the costs related to distribution are among the many areas of subsidiary's business operations that oftentimes are not thoroughly visible to the parent organization. However, subsidiary's distribution processes and costs might have a considerable effect on consolidated business of the whole MNC.

## **1.2. Problem of the study**

Current thesis is based on the subject provided by the case company. Ambiguous character of information on distribution being received by the case company from its foreign subsidiary along with the immoderately high subsidiary's sales freight expense figures sharply questions the fairness and rationality of the overall subsidiary distribution operations. Generally, the study addresses an issue of visibility into subsidiary operations and cost visibility into subsidiary distribution, in particular.

Lack of subsidiary distribution transparency as well as unavailability of detailed subsidiary's sales freight expense records causes certain inconveniences for the case company and, in particular, practical inability of thorough parental control over its subsidiary. Finally, the problem to be addressed by this study could be portrayed as virtual blindness of the case company regarding how exactly the products are distributed by its foreign subsidiary, where the sales freight expenses are in detail coming from and what kind of impact on business performance do they actually retain.

## **1.3. Objectives of the study**

Case company pursues improved cost visibility into subsidiary distribution. Therefore, the overall objective of this project is...

*...to develop a tool for parent organization, enabling enhanced cost visibility into distribution of its foreign subsidiary.*

In other words, the study aims to (1) provide a meaningful distribution cost reporting tool for the case company in order to thoroughly trace distribution costs of its foreign subsidiary. Moreover, this tool (2) has to be applicable for the further analysis of the impact of distribution costs on the business performance of the foreign subsidiary. Eventually, such a tool (3) has to facilitate the ability of case company to control the operations of its foreign subsidiary and its distribution in particular.

## 1.4. Overview of the case company

This study is carried out on the assignment of Kiilto Oy. Kiilto Oy is a medium-sized Finnish chemical company. The company was founded in Tampere in 1919 and, nowadays, focuses on development, manufacturing and marketing of adhesives and other related chemical products. Generally, Kiilto brand promotes the promise of a better living environment and brighter tomorrow (Figure 1).



*Figure 1. Kiilto logo.*

Kiilto Oy is the member of Kiilto Family – group of companies, currently involving six members. Annual turnover of Kiilto Oy is 77 million euros (2011), which counts for a half of that of the whole group. Kiilto Oy employs some 400 people in total and the head office is located in Lempäälä, where the researcher had a chance to be located during the study (Figure 2).



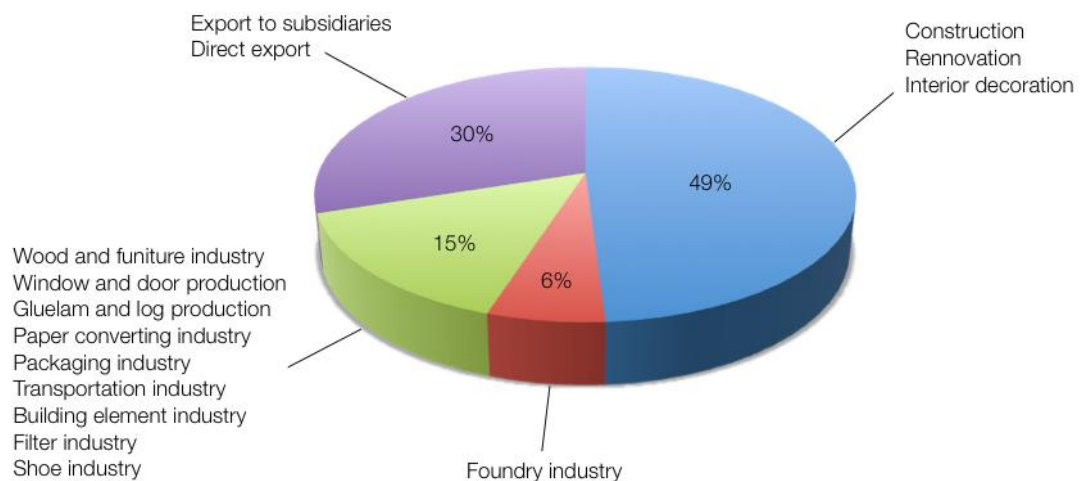
*Figure 2. Kiilto Oy in Lempäälä.*

Moreover, Kiilto Oy, being a multinational company, actively operates in countries other than Finland by the means of foreign subsidiaries. Accordingly, geography of Kiilto abroad includes such countries as Sweden, Poland, Estonia, Latvia, Lithuania, Ukraine, Belarus and Russia.

Generally, Kiilto Oy offers customers comprehensive solutions for surface preparation, bonding, coating and sealing. Main categories of product assortment include:

- Adhesives
- Waterproofing membranes
- Floor leveling compounds and wallplasters
- Joint and fixing mortars
- Bonding sealants and silicones
- Parquet lacquers
- Thinners
- Foundry products

Customers of Kiilto Oy range from private entrepreneurs to hardware store chains and large industrial businesses. Sales shares by business in 2011 are presented in Figure 3.



*Figure 3. Kiilto Oy: Sales shares by business in 2011.*

Kiilto Oy has a distant vision to be engaged in the profitable manufacture and sale of products in 2080, achieving its goal of regional market leadership. Company's operating approach declares that all the operations are guided by the business idea, company culture, quality, environmental and safety policies. Figure 4 illustrates the business idea of Kiilto Oy as well as the main success factors of the company.



*Figure 4. Kiilto Oy: Business idea and success factors.*

The core ideals of Kiilto Oy operations include customer-orientation, continuous innovation, domesticity, consideration of people and the environment. The essential components of Kiilto Oy's business idea are superior industry expertise and strong research and development leadership. Moreover, absolute imperative for realization of the business idea is effectively embracing human resources, the environment, safety and quality with strategic success factors.

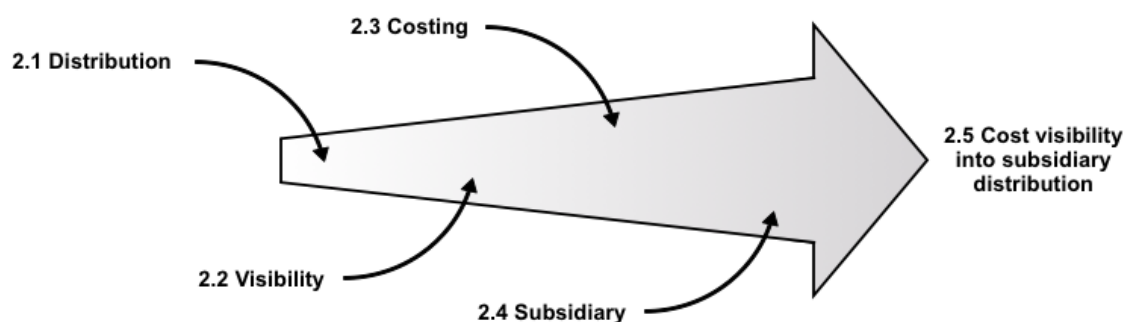
Importantly, Kiilto Oy highlights prompt deliveries among the success factors of the company. Indeed, unfailing and exceptionally precise accuracy of product deliveries is considered as the constituent of Kiilto's competitive advantage and is valued so much by the company's customers. Consequently, it is extremely important for Kiilto Oy to maintain its highest level of delivery accuracy both locally and outside the Finland.

## 1.5. Thesis disposition

The structure of the thesis follows certain logic and consists of introduction, theoretical part, methodology, empirical part, discussion and conclusion. Theoretical part, enclosed in Chapter 2, examines the literature relevant to the researched topic and, importantly, builds the theoretical framework with accordance to the purposes of the study. Chapter 3 discusses important methodological aspects of the used research. Chapter 4 represents the empirical part of the thesis and provides an application of the theoretical framework to the real company case. Chapter 5 presents a discussion of study results, reflection to the literature and suggestion for further research. Finally, the study is briefly summarized in the conclusion part of the thesis.

## 2. LITERATURE REVIEW

Chapter 2 represents the theoretical part of the thesis. Based on the vast review of relevant literature, main concepts are defined, clarified and interlinked. The chapter is split into five sections and the overall logic is built through a gradual accumulation of studied concepts into a single comprehensive framework (Figure 5).



*Figure 5. Logic of the Chapter 2.*

Visual representations of discussed concepts throughout this chapter facilitate the understanding of its consistency. Finally, theories and concepts presented in this chapter aim to provide a solid theoretical basis for the following empirical study.

### 2.1. Distribution

Any business environment is subject to truly rapid alterations happening continuously (Lalonde & Pohlen, 1997). Nowadays, business organizations are confronted by colossal pressures caused by the dramatically fast pace of change in the many facets of industrial life (Hollier, 1993). These pressures force modern business organization to devise proper and timely responses, including those within the field of supply chain management (SCM), logistics and distribution.

This section, first, examines the concepts of SCM and logistics, and elicits the correlation between them. Second, distribution is positioned relative to SCM and logistics as well as a general overview of distribution is provided. Finally, the evolution of distribution from a company perspective is discussed.

#### 2.1.1. Logistics vs. supply chain management

There exists a collision of opinions regarding the actual relationship between logistics and supply chain management since the very genesis of both terms. Basically, several

unique perspectives could be currently identified. According to the point of view taken, Halldorsson & Larson (2004) define four distinct strands: Traditionalist, Unionist, Re-labelist and Intersectionist (Figure 6).

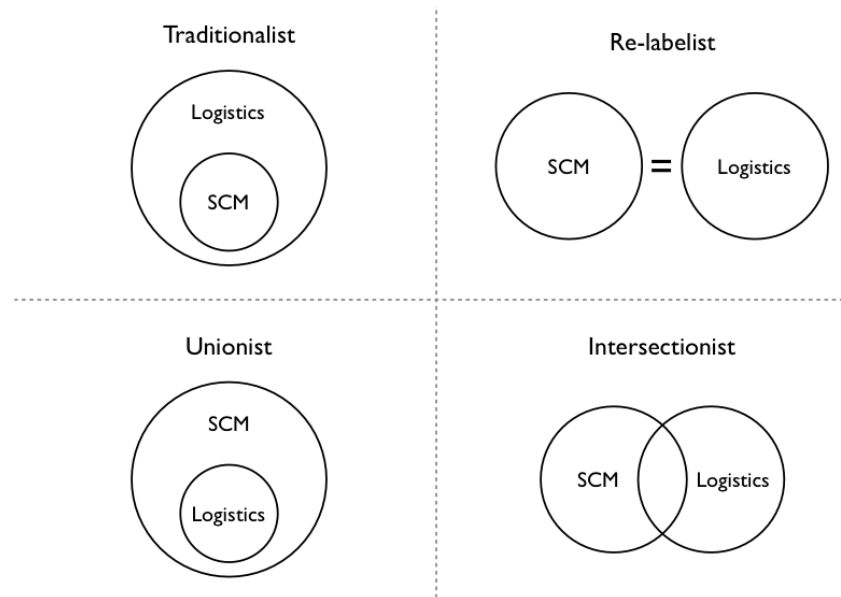


Figure 6. Logistics versus supply chain management (Halldorsson & Larson, 2004).

First, traditionalists believe that SCM serves as a part of logistics. Second, re-labelists claim that logistics and SCM are actually the same thing, simply named differently. Third, unionists declare logistics as a part of SCM. Finally, intersectionists think that logistics and SCM form an intersection, where logistics is concerned of operational decisions and SCM of strategic ones (Halldorsson & Larson, 2004). Yet, taking neither of approaches, the study provides a closer look on both concepts, starting with SCM.

Naturally enough, SCM means the management of supply chain. The concept of supply chain was first introduced in the beginning of 1960s, but it became widely used only in the very late 1990s (Soni & Kodali, 2012). Currently, supply chain can be defined as a sequence of organizations, including their facilities, functions and activities, which are engaged in production and delivery of goods or services (Stevenson, 2008). Figure 7 visually demonstrates a very simplified canvas of the supply chain concept.

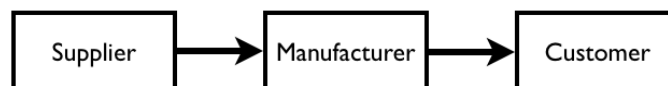
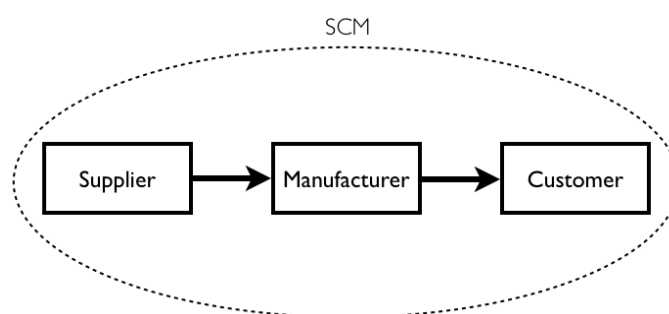


Figure 7. The supply chain.

Supply chain starts from the suppliers and lasts all the way down to the final consumer (Lyly-Yrjänäinen et al., 2010). All the vendors, service providers and customers represent certain links in the supply chain (Council of Logistics Management, 2010). Unlike in the extremely straightforward picture above, the real supply chains are usually

very complex and consist of large number of different parties and intermediaries such as, for example, component suppliers, system suppliers, wholesalers, agents or dealers. Due to such complexity and extensiveness, oftentimes, one is even compelled to talk about supply networks instead of supply chains (Lyly-Yrjänäinen et al., 2010).

Therefore, supply chain proves to be a rather broad concept, which obviously makes the scope of supply chain management as well rather comprehensive. SCM could be defined as a strategic coordination of business functions throughout the supply chain of business organization (Stevenson, 2008). Figure 8 demonstrates that the scope of SCM necessarily covers the entire supply chain.



*Figure 8. Supply chain management.*

According to the Council of Logistics Management (2010), the primary function of SCM is to integrate the supply and demand within and across business organizations. The study, however, now switches to the discussion on the term logistics, its evolution and definition.

Logistics concept is certainly not a new one (Hollier, 1993). The common notion of the term logistics implies some movement of goods from one place to another (Lummus et al., 2001) or work that is required to move and geographically position the inventory (Bowersox et al., 2012). Nevertheless, such common notion is actually not enough precise. Generally, the very conception of logistics has gone through a long history of advancement and redefinition.

The fact that business logistics got its emergence from military logistics is undeniable and has been highlighted by many modern authors (McGinnis, 1992; Hollier, 1993; Lummus et al., 2001; Tseng et al., 2005). However, till the middle of the 20<sup>th</sup> century logistics simply did not exist in the business understanding (Tseng et al., 2005). According to McGinnis (1992), the field of logistics as a business discipline happened to be in a state of continuous evolution since the term first appeared in the 1960s.

First, serving a predecessor to the logistics, the term ‘physical distribution’ implied solely the functions of transporting finished products to the customer. Second, the next definition drew attention to the integration of raw material, work-in-progress and

finished product flows. Third, logistics received the denotation of processes that involve both the flows and the storage of material goods and information aimed at satisfying customer needs (McGinnis, 1992). Finally, in the end of 20<sup>th</sup> century the evolution of business reached the threshold of logistics era (Rider & Ostrom, 1993), when logistics became a truly field of competition. Logistics lastly represented flows of goods, services, information and cash, and in order to fulfill the customer need.

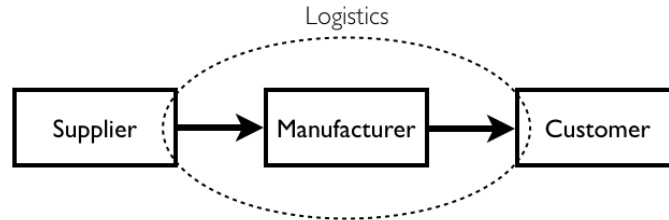
Indeed, logistics has evolved over the years to include more activities in firms (Cavinato, 2000) and, nowadays, the concept implies a rather wide scope. In order to reach an even better understanding of the modern term, Table 1 presents some of its recent denotations.

*Table 1. Definitions of logistics.*

<b>Source</b>	<b>Definition</b>
Cavinato (2000)	“Logistics represents the management of all inbound and outbound materials, parts, supplies, and finished goods.”
Council of Logistics Management (2010)	“Logistics is the process of planning, implementing, and controlling procedures for the efficient and effective transportation and storage of goods including services, and related information from the point of origin to the point of consumption for the purpose of conforming to customer requirements. This definition includes inbound, outbound, internal, and external movements”
Johnson & Wood (1999)	“Logistics describes the entire process of materials and products moving into, through, and out of firm.”
Lambert & Stock (2000)	“Logistics management is the process of planning, implementing and controlling the efficient, cost-effective flow and storage of raw materials, in-process inventory, finished goods, and related information from point-of origin to point-of-consumption for the purpose of conforming to customer requirements.”
Stevenson (2008)	“Logistics is the part of a supply chain involved with the forward and reverse flows of goods, services, cash and information.”
Tilanus (1997)	“Logistics is the process of anticipating customer needs and wants; acquiring the capital, materials, people, technologies, and information necessary to meet those needs and wants; optimizing the goods- or service-producing network to fulfill customer requests; and utilizing the network to fulfill customer requests in a timely way.”
Tseng et al. (2005)	“Logistics is a customer-oriented operations management.”

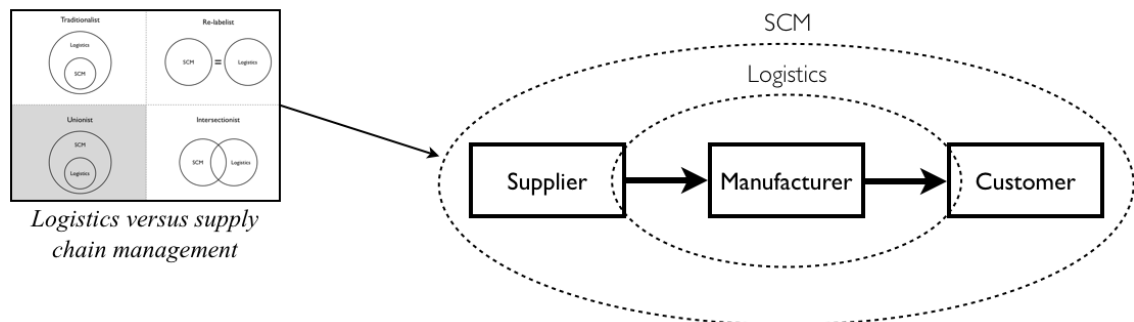


As becomes apparent from the table above, logistics relates to the part of the supply chain, focusing merely around the very business organization. Therefore, using the same straightforward supply chain canvas as previously, the scope of business logistics might be illustrated as in Figure 9.



*Figure 9. Logistics.*

To summarize, unlike the SCM, logistics does not cover the entire supply chain, but rather focuses on the part of supply chain around the very business organization. Consequently, it might be claimed that logistics serves as a subset of SCM, thus proving the feasibility of the unionists approach (Figure 10).



*Figure 10. Logistics as a subset of SCM.*

In conclusion, logistics concept was adapted to business from military science and went through several evolutionary stages. To date, by logistics in business sense one understands the management of internal and external to business organization flows of goods, services, information and cash, aimed at better satisfying the customer needs.

### **2.1.2. Distribution as a part of logistics**

Theoretically, logistics in its entirety covers a broad spectrum of functions both internally and externally to business organization (Hollier, 1993). For that reason, there exists a differentiation between internal or inbound and external or outbound logistics (Tilanus, 1997; Porter, 1998). On one hand, internal or inbound logistics indicates the management of goodsflows inside a plant: raw materials, parts, work in progress with inventories on the way as well as inventories of ready products. On the other hand, external or outbound logistics denotes the collection, transportation and distribution of goods through the public space either among the plants or to the consumers.

Practically, as a general rule, company logistics usually contains three interconnected elements (Crainic & Dejax, 1993):

- Procurement
- Production
- Distribution

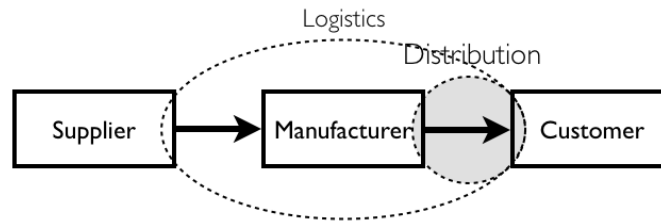
First, procurement is responsible for obtaining various required raw materials, parts, supplies and services (Stevenson, 2008). Second, production involves logistics processes needed for turning raw materials into finished products. Finally, distribution is concerned with storing and delivering finished products to customers. Referring to the previous differentiation, procurement and production should be included in the internal or inbound logistics, while distribution undoubtedly represents the external or outbound logistics. As a matter of fact, the latter – distribution, appears to be particularly important for the scope of this study.

Distribution covers the outward flows of finished products that proceed through some identifiable chains of transportation links as well as storage or distribution nodes (Stern et al., 1996). Distribution is organized into several levels, amount of which vary case to case and is dependent on the economic sector or particular logistical context. However, oftentimes, following three levels are present (Crainic & Dejax, 1993):

- Production level
- Intermediate level(s)
- Customer level

First, production level of company distribution contains all kinds of production facilities, where the finished products are coming from. Second, intermediate level or levels (there might be several) represents various distribution centers, warehouses and depots, where products are stored or distributed. Finally, customer level indicates the variety of customers, to whom deliveries are made.

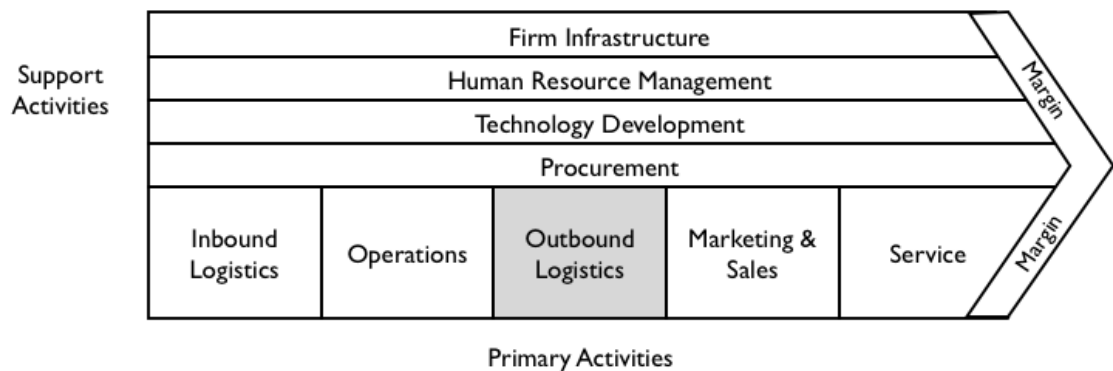
Distribution system of an industrial company represented by the above-listed levels fulfills the combined objectives of storing finished goods after production as well as transporting them to the customers in accordance with the demand (Crainic & Dejax, 1993). Therefore, responsibility of distribution function normally begins at the end of the production and ends when a correct delivery has taken place (Ray et al., 1979). In particular, term distribution is usually applied to all the logistics activities engaged into the management of finished products from production to final customers (Crainic & Dejax, 1993). Hence, distribution as a part of logistics can be illustrated as in Figure 11.



*Figure 11. Distribution as a part of logistics.*

Distribution should work in strong conformity and collaboration with the sales and production and ensure the optimal functioning of the business organization as a whole (Crainic & Dejax, 1993). Actually, the overall objective of a company distribution system should be to maximize the profits (Ray, 1975). Moreover, proper distribution practice performed as a part of company logistics enables benefits both for service quality and for general company competitiveness (Tseng et al., 2005).

In fact, distribution has always been positioned among crucial elements of competitiveness of business organizations, however, recently its importance has increased even more in virtue of the market and production evolution (Caputo et al., 2006). Porter (1998) classifies outbound logistics or distribution as one of the primary activities of the value chain, when accenting the influence of value chain elements towards gaining competitive advantage (Figure 12).



*Figure 12. Distribution within the value chain.*

In conclusion, distribution is essentially a part of logistics. Distinguished from internal or inbound logistics, distribution covers the part of the supply chain from the end of production to the final customer. Distribution is treated as one of the primary activities within the value chain of the business organization (Figure 13).

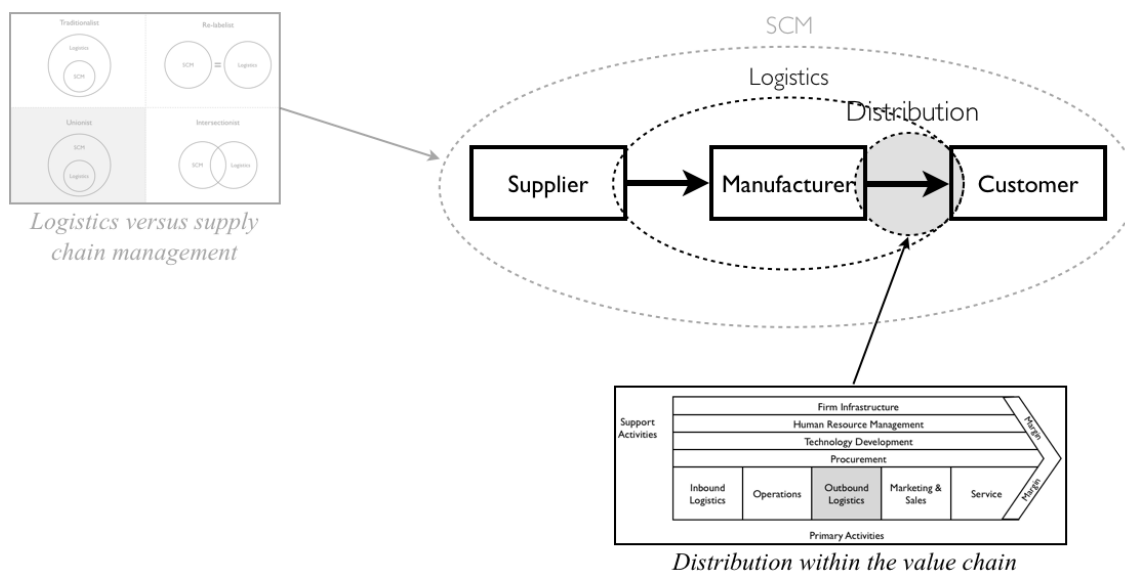


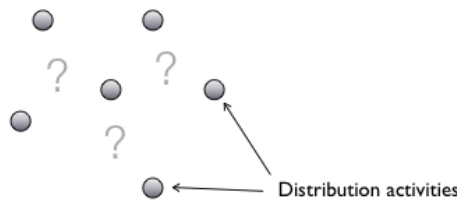
Figure 13. Distribution as part of logistics and primary activity of the value chain.

Efficient management of distribution as a part of logistics may become a reason for distinction between success and defeat in the market (Rider & Ostrom, 1993). Leading edge business organizations tend to rely more and more on their competence in distribution in order to gain competitive advantage (Bowersox & Daugherty, 1992). However, in reality, distribution does not immediately become a perfect driver of company's competitive advantage, but it rather has to be gradually developed to such a state through a certain evolutionary course.

### 2.1.3. Evolution of distribution from company perspective

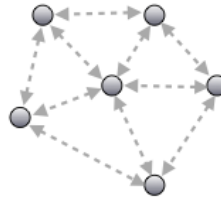
Bowersox & Daugherty (1992) state that, in general, logistics, practiced by business organizations, tends to evolve as the logistics competence grows. As a matter of fact, the evolution of logistics from a company perspective is usually following a certain and rather easily identified path (Bowersox & Daugherty, 1992). Considering the proven fact that distribution serves as a part of logistics, one might claim that exactly the same logic might be applicable to the evolution of company's distribution. Distribution progresses along a continuum from fragmentation to a complete strategic integration.

First, the initial state of company's distribution appears to be sort of fragmented in nature (Figure 14). Seldom managers are yet appreciating the potential advantages that might be attained by enhancements towards more efficient management of distribution activities. Primarily, company attempts to somehow evaluate the overall performance of distribution and build a solid understanding of its present condition. At this stage, any alterations in distribution are regularly driven by cost-saving pressures.



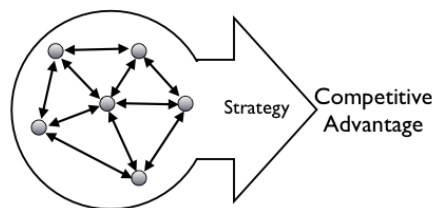
*Figure 14. Fragmented stage of company's distribution.*

Second, the advantages of improved distribution appear at the horizon. Company begins to actively seek for integration of various distribution activities and processes (Figure 15). Information on distribution becomes valuable support for operational decisions. Suddenly, there appears a correlation between distribution and customer service. Company tends to manipulate its partially integrated distribution activities in order to meet certain levels of customer service. The focus of this stage, however, is solely on here and now.



*Figure 15. Integration stage of company's distribution.*

Finally, the eventual stage of company's distribution evolution is initiated by step towards a use of information on distribution for strategic orientation. Accordingly, a complete integration of distribution activities unveils the full potential of distribution for the sake of company's strategy. Distribution competence starts to be exploited in the long term and in order to gain and maintain competitive advantage (Figure 16).



*Figure 16. Strategic integration stage of company's distribution.*

The above-described common evolutionary pattern demonstrates the typical path followed by a company that seeks for improved logistics (Bowersox & Daugherty, 1992) or distribution. Duration of such evolution at company level varies significantly case to case and is indeed dependent on multiple factors that root both from the inside and outside of the business organization.

In order to reach the superior distribution excellence as well as to actually make the evolution of distribution happen, companies have to routinely monitor and measure

distribution performance (Bowersox & Daugherty, 1992). Along the whole distribution evolutionary path companies tend to expand the scope of their measurements in the field of distribution (Figure 17).

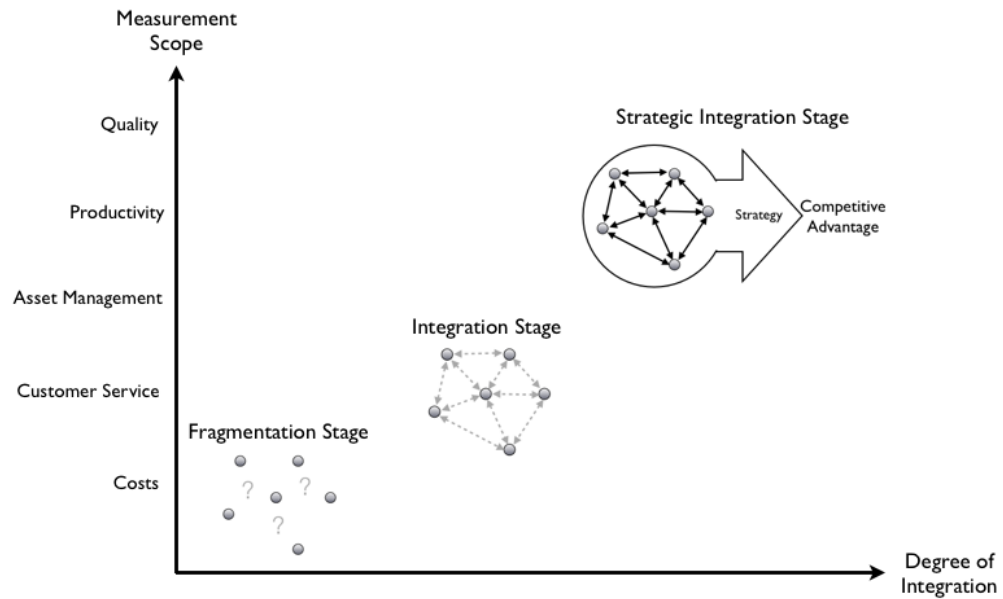


Figure 17. Evolution of company's distribution.

First, distributionally immature companies with fragmented distribution activities tend to focus solely on measuring distribution costs. Second, when companies are reaching more integrated state of distribution processes, customer service levels broaden the focus of measurement. Third, those companies that use distribution as a resource for strategic orientation include measurement of the asset management, productivity and quality into their normal operations.

In conclusion, distribution as a part of logistics tends to evolve from fragmentation to strategic integration, until the superior distribution competence is used for strategic implications and as an element of value chain, actively contributing towards gaining competitive advantage (Figure 18).

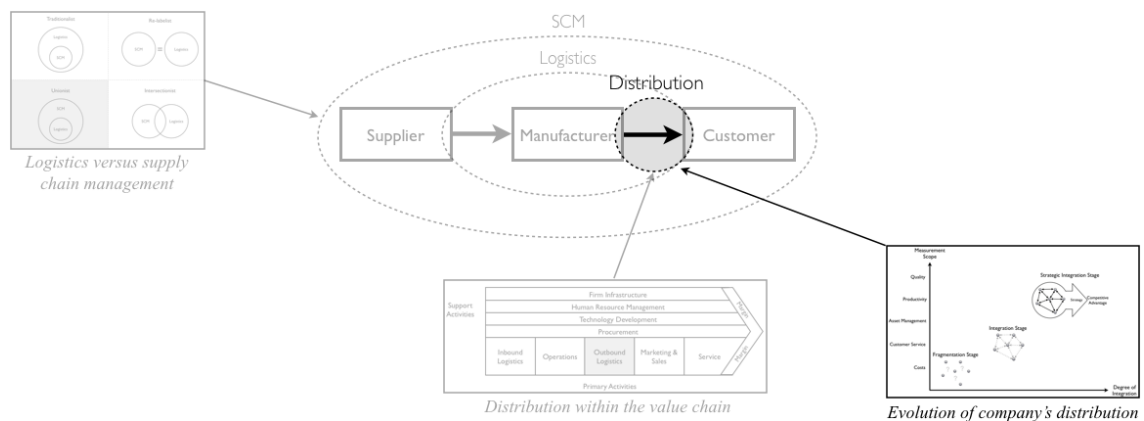


Figure 18. Evolution of distribution from company's perspective.

Containing large numbers of intertwined players, distribution networks of modern business organizations require complex nets of information exchanges as well as sufficient managerial procedures to function as coherent units in the eyes of customers (Perego et al., 2011). Finally, in order to effectively manage distribution in today's complex business environment, companies are obliged to have a clear and comprehensive understanding of their distribution systems.

## **2.2. Visibility**

The old saying, which states that information is power, is easily applicable to modern businesses. Importance of information for business operations and for overall business success is indeed apparent in current extremely competitive business environment and society, which is often referred to as informational (Vaughan, 1997). Information nowadays has received identification as a genuine business resource (Closs et al., 1997) that determines the well-being of modern business organizations.

This section, first, introduces the general notion of information visibility and its importance within the field of business. Second, supply chain visibility (SCV) and its advantages are introduced. Finally, various types of SCV are presented while describing existing SCV frameworks and the concept of distribution cost visibility is developed.

### **2.2.1. Information visibility in business**

Paradoxically, even though more and more information exists and is available, proportionally smaller amount of it is being efficiently captured, organized, analyzed and delivered to those, who really need it (Butner, 2010). Free and unimpeded flows of critical information are imperative to efficient integration of business functions (Closs et al., 1997) and, therefore, to the efficient performance of today's companies.

Traditional treatment of information as something infinitely sacramental, something that has to be closely guarded, protected and never revealed (Kumar, 2009), in today's business, is naturally opposed by an idea of information sharing. As business networks are expanding and companies are becoming exceedingly spread and complex, information sharing within the business organization as well as among the units of business networks receives more and more attention.

General ability to access and share information is often called as information visibility (Caridi et al., 2010). Figure 19 demonstrates how the information visibility concept might be presented graphically.



*Figure 19. Information visibility.*

It is important to understand that visibility is not an activity as the actual information sharing is, but visibility is a potential outcome of information sharing activity (Barratt & Oke, 2007). Therefore, information visibility is necessarily a result, but not a cause of information sharing.

It is believed that sharing meaningful and useful information and resulting information visibility may provide various benefits mutual to the business parties involved. Information visibility may serve as an enabler of efficient knowledge exchange and enhanced governance (Caridi et al., 2010). It can at the same time contribute to better planning activities as well as to be fundamental for real-time execution (Butner, 2010).

Eventually, interorganizational visibility of information as well as information visibility across organizational boundaries is more and more viewed as critical for business competitiveness (Bartlett et al., 2007). The success of creation and coordination of efficient supply chain is to a high extent dependent on the availability of data and information (Moin & Salhi, 2007). As a matter of fact, in business literature, the term information visibility is usually used within the field of supply chain management and logistics, and is often referred to as supply chain visibility (SCV).

### **2.2.2. Supply chain visibility**

Today, companies are operating in highly competitive environment and constantly need to respond to ever-changing customer demands (Vozobulová, 2010). Supply chains and logistics systems of companies are becoming exceedingly complex. The proper exploitation of information factor is needed to create transparent supply chain structures (Hollier, 1993). It is claimed that so called supply chain transparency or more often SCV is now becoming one of the key issues of efficient coordination and management of relations between business parties (Swaminathan & Tayur, 2003).

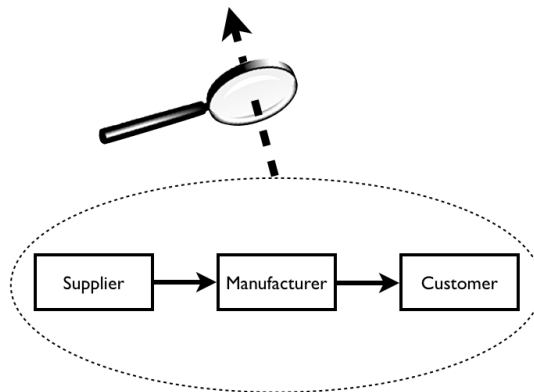
Generally, SCV is a prominent concept that has been studied by many scholars, however, it seems that there is yet no unique definition available (Caridi et al., 2010). Therefore, for the sake of conceptual clarity, following table suggest the list of some recent definitions of the term (Table 2).



*Table 2. Supply chain visibility definitions.*

Source	Definition
Lamming et al. (2001)	SCV is an element of supply relationships, which aids demystification, however, it goes way beyond simply better communication or information sharing. It is a dynamic element of specific relationship, driven by agreed purposes, but not as a feature or attribute.
Tohamy et al. (2003)	SCV is company's ability to collect and analyze distributed data as well as to generate specific recommendations and match insights to strategy.
Zhang et al. (2008)	SCV is the ability to access or view relevant data or information as it correlates to logistics and the supply chain.
Harvey & Wolfe (2008)	SCV denotes the access to precise and timely information throughout supply chain processes and networks that allows business organizations to make decisions faster and with more precision.
Hultman & Axelsson (2006)	SCV is the ability to 'see through' and to share information that is usually not shared between business entities.

On the strength of the table above, SCV can be defined as the ability to collect, process and use specific information related to the functioning of the supply chain. SCV can be illustrated as in the following Figure 20.



*Figure 20. Supply chain visibility.*

Generally, there exist a variety of reasons, why business organizations actually decide to direct their efforts towards attaining SCV. Heaney (2011) lists the following main reasons of pursuing SCV:

1. Global expansion and consequent complexity of operations
2. Need for improved supply chain operational speed and / or accuracy
3. Need for reduced costs incurred in the supply chain

4. Intensified stakeholder and customer demand for accuracy and timeliness of inbound or outbound shipment information
5. Need for reduction, proactive allocation or more efficient management of inventories at various stages in the supply chain
6. Need for optimization of the numbers of trading partners, suppliers, carriers, logistics service providers (LSPs)

Moreover, when for one or another reason business organizations decide to attain SCV and if the SCV is in the end reached, certain advantages may arise. The often-cited potential benefits of reaching SCV are presented in Table 3.

*Table 3. Potential advantages of supply chain visibility.*

Advantages of supply chain visibility	Barratt & Oke (2007)	Bartlett et al. (2007)	Handfield (2002)	Kaipia & Hartiala (2006)	Montgomery et al. (2002)	Muthukrishnan & Sullivan (2012)	PelycoSystems (2012)	Vorobyeva (2010)
Ability to better mitigate the risks							✓	
Better customer service			✓					✓
Better planning abilities	✓				✓	✓		✓
Better supplier performance						✓		
Better understanding of the demand				✓		✓		
Enhanced control and execution							✓	
Enhanced inventory management				✓	✓		✓	✓
Higher productivity		✓						
Immediate access to valuable information							✓	
Improved ability to reveal supply chain blind spots							✓	
Improved decision-making	✓				✓			✓
Improved relationships among supply chain members						✓		
Improved sales				✓		✓		
Increased ability to satisfy customer needs								✓
Increased product quality	✓							✓
Increased supply chain responsiveness to changes		✓				✓	✓	✓
Less variability in schedules and orders						✓		
Maximized logistics and transportation effectiveness							✓	
More precise performance measurements							✓	
Shorter lead and delivery times					✓			✓
Various cost reductions					✓	✓	✓	✓

According to PelycoSystems (2012), the real SCV is more than just a simple understanding of what is happening at the current moment in the supply chain. SCV advances the ability of recognizing potential problems proactively, which helps solving them even before they occur (PelycoSystems, 2012). Ultimately, a more sophisticated and detailed view of the supply chain enables business organizations to optimize efficiency and contribute heavily to gaining of competitive advantage (Harvey & Wolfe, 2008). SCV and its potential advantages are depicted in Figure 21.

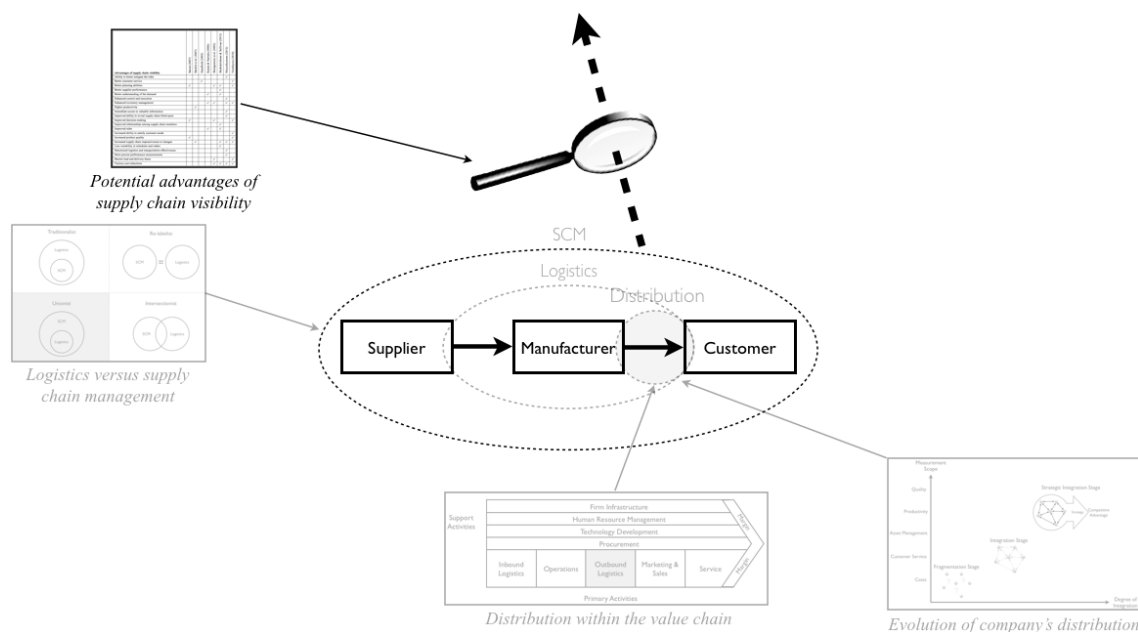


Figure 21. Supply chain visibility and its potential advantages.

Theoretically, SCV can be reached along the entire supply chain, so that information is transparent for all the parties involved. However, unfortunately, in practice it might not always be so. In reality, implementing SCV, so that it would guarantee an improved supply chain performance is indeed challenging (Kaipia & Hartiala, 2006). Latterly, along with the broad variety of definitions, there exist a variety of frameworks describing SCV and its types.

### 2.2.3. Supply chain visibility frameworks

For deeper comprehension of the concept as well as for understanding of the right position of visibility relative to other characteristics of business relationships, Lamming et al. (2001) use quite a straightforward metaphor. In their metaphor, they seek analogy between transparency of the mineral when light is shining through it, and visibility in terms of business relations. The analogy also includes such qualities of mineral as opaqueness and translucency (Table 4).

Table 4. The metaphor of transparency (Lamming et al., 2001).

	<b>Opaque</b>	<b>Translucent</b>	<b>Transparent</b>
<b>Geological Case</b>	Light cannot even penetrate the surface of the substance.	Light can enter and exit the surface of the substance, but with distortion.	Light enters and exits the surface relatively undisturbed.
<b>Business Case</b>	For any of a variety of reasons, no information is shared between the parties.	Outline information only is shared - interface conditions or partial data.	Information is shared on a selective and justified basis.

Apparently, in geological case, light is a felicitous analogy to information or knowledge within the supply chain, for the reason that knowledge must be transferred in order to get mutual advantages. In addition, in terms of relationships, Lamming et al. (2001) mention two extreme states, which are unmanageable in any way. They are called 'dazzle', when too much data is presented and receiver cannot cope with it, and 'black hole', when information is so complicated and buried so deeply that it is impossible to understand and share it (Lamming et al., 2001).

First, according to Lamming et al. (2001), there are two main types of visibility within the area of industrial marketing and supply chain management:

- Cost visibility - sharing of costing information between customer and supplier, including data, which would traditionally be kept secret by each party, for use in negotiations. Purpose of cost visibility is to unite the work of customer and supplier to reduce cost and improve other factors. (Lamming, 1993)
- Value visibility - creation, nurture, and delivery of value, for the benefit, and thus continued existence, of both parties. It involves managed risk for both sides as well as detectable returns, associated with that risk. (Lamming et al., 2001)

The evolution from a plain data provision to two-way sharing of sensitive information to gain new value creation is stated to heighten the richness of knowledge environment within the supply chain (Lamming et al., 2001). In our society, which almost can be described as informational, the amount of information is so huge that this fact gives an illusion of absolute visibility. The same phenomenon takes place in supply chain practices, so this illusion, as it happens, only adds challenges. Hultman & Axelsson (2006) together with Lamming et al. (2001) emphasize that, as the information flows may run in one or two directions, visibility also may be either reciprocal or single-sided.

Second, framework built by Hultman & Axelsson distinguishes four types of SCV (Hultman & Axelsson, 2006):

- Cost (price) visibility - visibility of information related to costs and prices
- Supply visibility - visibility of various flows of products and materials between customer and supplier
- Organizational visibility - visibility in relational horizons of business relationships
- Technological visibility - visibility in technological horizons, in other words in how parties of supply chain share the use of technologies

Hultman & Axelsson (2006) also propose to add three facets of visibility to the framework. First, as visibility is dynamic, it should have different degrees present in buyer-supplier relationships. Thus, it is claimed that degree of visibility may be high or

low, increasing or decreasing. Second, visibility should have a direction. Therefore, it may be uni-directional or bidirectional, upstream or downstream, vertical or horizontal. Third, the last facet of visibility is its distribution. To understand the latter aspect, focus should shift to the whole supply chain instead of buyer-supplier dyad. Visibility may be direct or indirect, which means that it may be present in a certain relationship (direct) or in a relationship connected (indirect) to the initial one (Hultman & Axelsson, 2006).

The most noticeable remark made by Hultman & Axelsson (2006) is that increased visibility in business relationships could have not only positive, but also negative impact (Hultman & Axelsson, 2006). In fact, too much increased visibility may cause frustration or problems of other nature. Therefore, it is very important to understand that the highest extent of visibility should not necessarily mean the sharing of all the information, but rather implies that relevant and meaningful information is shared when required (Kaipia & Hartiala, 2006).

Hence, there are two consequences, when there is either too much visibility or too little. Visibility is positive when it provides efficiency; otherwise it is just a source of difficulties. In a like manner, lack of visibility leads to information manipulations, resulting in its false or misleading use. In addition, there is a close relation between visibility and trust, since visibility works only as long as parties are able to trust one another (Hultman & Axelsson, 2006).

Generally, in order to reach essential level of control over logistics and distribution, modern companies require a comprehensive view into their supply chains, enabled by the concept of SCV (Harvey & Wolfe, 2008). Therefore, the main purpose of reaching SCV can be stated as to enhance the overall control over supply chain and logistics operations, in particular.

Conclusively, the above-presented frameworks facilitate the understanding of the SCV concept. Both presented frameworks have one crossing concept - the type of SCV, called cost visibility. Cost visibility as a type of SCV might be defined as the visibility of cost information within the supply chain. Figure 22 demonstrates how cost visibility can be illustrated.

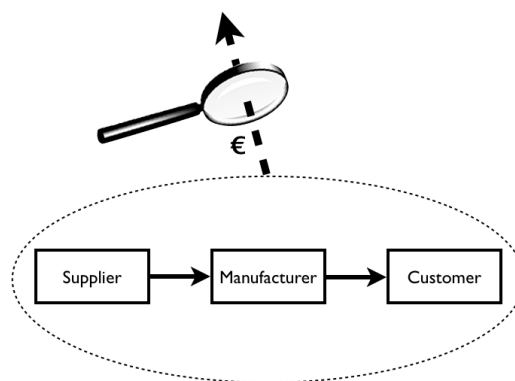


Figure 22. Cost visibility.

Indeed, complex interrelation of the elements of supply chains of modern business organizations requires access to the most accurate cost information (Pirttilä & Hautaniemi, 1995). Lacking the adequate cost visibility, it is practically impossible to efficiently create, control and monitor supply chain economically (Hollier, 1993). Similarly, cost visibility and accurate cost information are critical for logistics and distribution excellence.

Importantly, by narrowing the scope of cost visibility concept from the whole supply chain down to its distribution part, one might come up with the concept of distribution cost visibility. Therefore, distribution cost visibility is the ability to collect, process and use the distribution cost information (Figure 23).

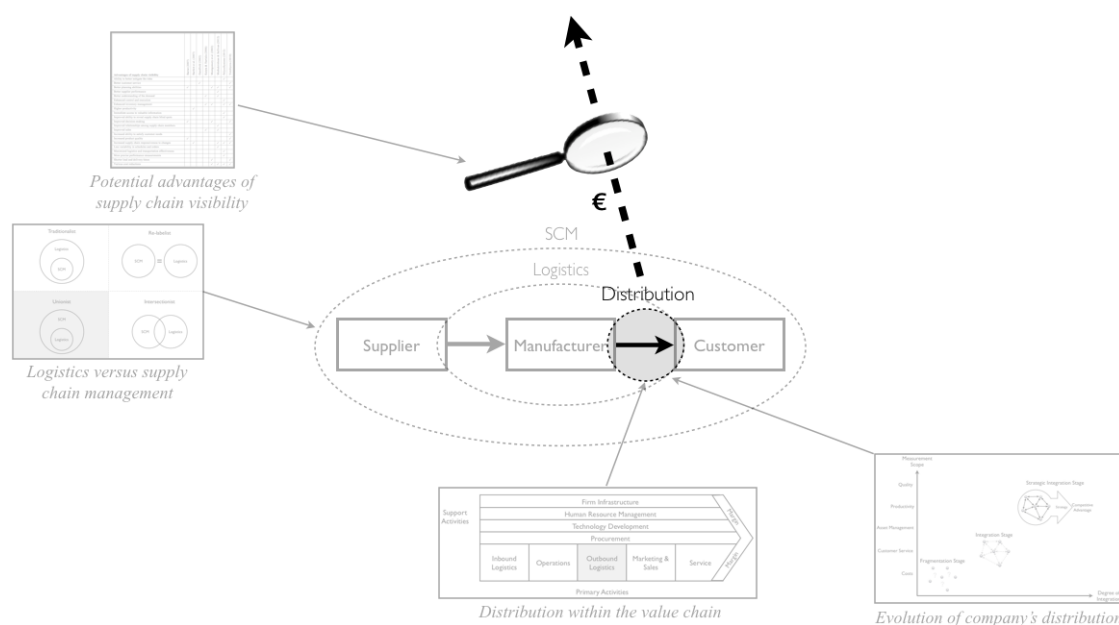


Figure 23. Distribution cost visibility.

The concept of distribution cost visibility is particularly important for the purposes of current thesis. Disclosure of the actual distribution cost information and its approximation to the reality might have dramatic implications for business organizations and lead to the extensive adjustments of various characters (Ray, 1975).

## **2.3. Costing**

Naturally, in any business, when realizing products either produced or purchased, the primary objective is, of course, to sell for a price that is above the cost (Esculier, 1997). In the most general sense, cost is a sacrifice of resources (Williams, 1997). Cost indicates the monetary value of resources required for some particular business activity for example, manufacturing some particular product.

This section, first, provides a general overview of costing and methods of cost allocation as well as discusses the importance and use of cost information. Second, logistics and distribution cost components are presented and briefly described. Finally, the concept of cost database and its possible application are introduced.

### **2.3.1. Costing and cost information**

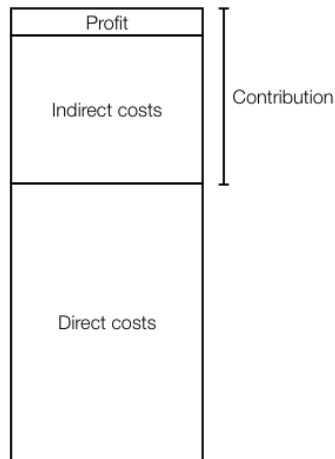
According to IFAC (2009), the development, application, use, alteration and termination of any action and function within a business organization consume certain economic resources. Measurement, accumulation and allocation of those economic resources to the variety of processes that take place in organization as well as to their outputs allows the structure and functioning of the organization to be interpreted, understood and, most importantly, enhanced. It is exactly costing that embraces these processes and defines them using money as a common language (IFAC, 2009). It is costing that provides an understanding of actual costs incurred in various business actions and their outcomes.

Generally, costs can be classified into various categories (Barriere-Varju, 2012), however, this study distinguishes between direct and indirect costs. Direct costs refer to expenses that can be attributed directly to the production of some particular product. For example, costs of raw materials or packaging are direct material costs, while labor wages are direct manufacturing costs. Indirect costs, on contrary, cannot be measured with respect to each particular product unit. For example, cost of storage rent and electricity used in production are indirect costs. Finally, indirect costs are often also referred to as overheads.

Nowadays, business organizations are in drastic need for adequate costing methodologies that could provide the right cost information (Ventana Research, 2010). Companies are free to choose among different methods of allocating their costs, though the following three methods tend to be used the most:

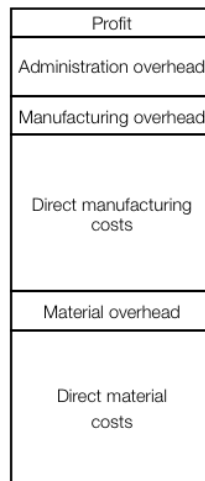
- Contribution costing
- Full costing
- Activity-based costing (ABC)

First, in contribution costing, the price of a product is considered to consist of two parts: direct costs and contribution, while contribution represents the aggregate of indirect costs and profit (Figure 24). Contribution is called so because it basically adds value to the total purchased costs of input components. The amount of profit is usually determined by a profit margin ratio that is set by the company.



*Figure 24. Contribution costing.*

Second, full costing attempts to analyze the allocation of indirect costs in more detail. Different types of overhead costs can be distinguished (Figure 25). Full costing method is particularly important for the course of this study.



*Figure 25. Full costing.*

Finally, ABC examines the allocation of overheads even more thoroughly. The basic idea behind ABC approach is that products are resulting from certain activities, which, in turn, are performed with the use of resources that incur costs (Blocher et al., 2009). ABC, which became rather popular in the recent decade, is often differentiated from previously discussed traditional costing methods and is generally believed to facilitate much more accurate cost computations.



Undoubtedly, the above-mentioned costing methods are not the only used. Their combinations and more sophisticated modifications could be found in today's business organizations. Generally, costing facilitates the understanding of how profits and value are generated as well as how efficiently the operations convert inputs into outputs (IFAC, 2009). Costing is applicable to any process or any action happening along the value chain of the business organization.

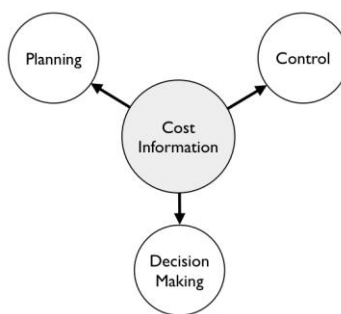
Generally, costs have to be known if companies are seeking for maximized profitability. However, simple knowledge of costs seems to be insufficient for advancing the efforts towards gaining better overall cost performance. Costs have to be measured, reported, analyzed and managed. Accordingly, Barriere-Varju (2012) highlights several sequential end-goals in the general desire to master the costs:

- Cost measurement
- Cost reporting and analysis
- Cost management

First, cost measurement practically means relating costs to, for example, particular goods, services, organizational units or processes. Second, cost reporting and analysis imply aggregating, classifying, communicating, interpreting cost data as well as turning it into information useful for planning, control and decision-making. Finally, cost management is all about taking real managerial actions in order to reduce costs (Barriere-Varju, 2012).

Understanding the real costs involved in business activity or product is challenging. However, without proper cost information being available, managers are unable to make accurate decisions, for instance, about sourcing, pricing or logistics (Ventana Research, 2010), and to react timely to the changes of business environment. Cost information is critical for making intelligent managerial and financial decisions as well as for supporting the examination of cost incurrence effectiveness (Barriere-Varju, 2012).

As a matter of fact, cost information can be used, on one hand, to assess the past performance or, on the other hand, to motivate and change the future performance (IFAC, 2009). In that sense, cost information is usually required for such types of managerial activities as planning, control and decision-making Figure 26 illustrates the later statement.



*Figure 26. Use of cost information (Barriere-Varju, 2012).*

Managers who possess extensive cost information on various business activities are believed to create more realistic plans, conduct more comprehensive control and, generally, make better decisions. Normally, cost information is essential for all the phases of management (Barriere-Varju, 2012). Similarly, the proper use of cost information can help managers to (IFAC, 2009):

- Precisely evaluate the organization's performance
- Make better plans
- Correctly analyze the outcomes of different alternatives.

Therefore, information on the actual costs is extremely valuable for managers and can positively affect the efficiency of their managerial duties. Furthermore, business organizations usually possess various needs to costing information. In this vein, IFAC (2009) present a set of key principles that define widely recognized good practices regarding the cost information. These are:

1. Value of costing to better management
2. Suitability for purpose
3. Cost model vs. reality given
4. Accuracy requirements vs. cost effectiveness
5. Consistency and comparability
6. Transparency and auditability

First, in order to develop an informed understanding of organizational drivers of profit and value, necessarily, there should exist an ability to define, measure, explain and represent various costs in their relation to the organization's flows of economic resources. Second, cost information should be prepared with respect to a certain context and particular purpose of its use (historical and descriptive, interpretative and diagnostic, analytical and predictive). Third, cost information should be designed and kept in a state, so that it reflects the actual processes of organizational functioning, considering the information needs of decision makers. Fourth, the development, implementation, improvement and updating of cost information should reflect the proper balance between demand for accuracy and costs of measurement. Fifth, cost

information should be gathered and analyzed in a systematic manner and enabling comparability over time. Finally, all the processes related to the creation of cost information and its use should be transparent to users, recorded and anytime available for review, assessment and assurance.

Each of the above principles may be applied independently. Nevertheless, the whole set should not be considered as a sequence of steps. Moreover, the principles are designed so, that they can be practically applied to any business organization (IFAC, 2009).

Due to an unceasing tendency of the global economy towards competitiveness, the need for precise and accurate cost information is expected to progressively increase in significance (Everaert et al., 2008) including the fields of logistics and distribution. Therefore, the thesis moves on to a discussion on cost components often associated with the business fields of logistics and distribution.

### **2.3.2. Logistics and distribution costs**

Nowadays, the control over logistics performance serves as a major concern for company management (Stainer, 1997). Activities conducted within the scope of logistics affect company performance with respect to revenue enhancement and cost reduction (Cho et al., 2008). Global logistics environment demonstrates a tremendous need for accurate cost information (Everaert et al., 2008).

Cost information is needed in order to monitor, manage and control the general logistics system, its individual elements and even to evaluate the efficiency of particular logistics activities (Pirttilä & Hautaniemi, 1995). Accordingly, within the field of logistics operations, cost knowledge is truly essential (Everaert et al., 2008) and becomes more and more critical to competitiveness.

In the past, it often happened so that cost systems used in the majority of business organizations were not even planned to indicate separately the expenses related to logistics (Frederick, 1958). However, a matter of costs embedded in logistics operations has then become a major topic of research in transportation and logistics (Wood, 1993). This fact led to a rather clear understanding of high importance of logistics costs for modern business organizations.

As more spread and complex the supply chains are becoming, the more critical it is to understand and correctly evaluate the variety of logistics-related costs (Zeng & Rossetti, 2003). Today, managers in companies of all the sizes and of many various industries are in active pursuit of making their companies more competitive by developing and exploiting strategies aimed at minimizing logistics costs (Shapiro, 1993). However, to be able to do so logistics costs, first, have to be defined and interpreted.

Zeng & Rossetti (2003) state that the evaluation of logistics costs within the global context is claimed to be rather difficult. Due to high complexity of global logistics system as well as significant number of cost items included in logistics operations, existing methodologies and tools for evaluating logistics costs in the end tend to be rather sparse (Zeng & Rossetti, 2003). Generally, cost implications are evaluated either by the means of experiment (engineering or modeling) or with the use of ex post (statistical, retrospective) analyzing techniques (Wood, 1993).

Overall, the costs embedded in logistics or associated with logistics operations are ordinarily composed of the elements presented in Table 5.

*Table 5. Logistics costs components.*

Source	Logistics costs components						
	Administration	Order processing	Customer service	Warehousing	Inventory handling	Transportation	Information systems
Davis & Drumm (1996)	✓	✓	✓	✓	✓	✓	
Kopczak et al. (2000)				✓	✓	✓	✓
Lambert & Stock (2000)	✓	✓	✓	✓	✓	✓	
Shah (2009)	✓				✓	✓	

Evidently, there is no clear single opinion on which activities should in fact reflect the logistics costs. However, the above table demonstrates that, for instance, inventory handling and transportation elements of logistics costs were mentioned in all the analyzed sources. The majority as well referred to warehousing and administration components. Interestingly, Kopczak et al. (2000) are the only ones to include the use of information systems (IS) into logistics costs.

Nevertheless, the thesis narrows the focus down to the outbound logistics or distribution function of business. Distribution is a part of logistics that starts from the end of production and ends when the delivery to customer is actually done. Distribution costs are claimed to be among major expense items for many companies (Williams, 1978). Therefore, the lack of adequate cost data can be a great obstacle to efficient management of distribution (Ray, 1975).

Traditional costing systems do not exhibit adequate differentiation of distribution costs (Ray, 1975) from logistics costs. Initially, distribution costs were practically not given much of esteem by the top-management and, consequently, by the organizational financial units. However, when the penny finally dropped and when the extensive nature of distribution costs proved to have a significant role for value and profit creation, the treatment has dramatically changed (Ray, 1975).

Distribution costs themselves are highly variable, depending on, for example, geography, product size or product type (Ray, 1975). For the reason that distribution is principally the subset of logistics, distribution costs should be very similar to those of

logistics, however, be applicable sort of more aimed, solely to the outbound part of the logistics system. Table 6 demonstrates the costs elements of distribution.

*Table 6. Distribution costs components.*

Source	Distribution costs components					
	Administration	Order processing	Materials handling	Warehousing	Inventory control	Transportation
Cook & Burley (1985)		✓	✓	✓	✓	✓
Garnett & Smith (1972)		✓	✓	✓	✓	✓
Ray (1975)			✓	✓		✓
Williams (1978)	✓			✓		✓

Similarly to the case of logistics costs components, there is no single opinion on components of distribution costs. Interestingly, administration, order processing and inventory control were mentioned the least. However, the majority of analyzed sources referred to materials handling. Warehousing and transportation elements of distribution costs were mentioned by all the sources. Finally, transportation costs within distribution are particularly important for the scope of this study and, therefore, might deserve some more detailed attention.

Generally, a well-established transportation system is able to provide better logistics efficiency, decrease related costs and promote service quality (Tseng et al., 2005). At the same time, it is typically transportation that offers the most opportunities for savings (Williams, 1978). Transportation represents the transformation of place, moving shipments through public space and by various modalities (Tilanus, 1997). Transportation has progressively evolved into a dominant issue currently facing logistics processes (Perego et al., 2011). It is transportation that makes products movable and is indeed the most significant economic activity among those within distribution of modern companies (Tseng et al., 2005).

Transportation serves as a critical factor in offering high customer service quality affecting delivery accuracy, timeliness, punctuality and other (Perego et al., 2011). It is suggested that the majority of potential unfavorable issues related to distribution of modern companies might be traced to inefficient transportation practices (Huq et al., 2010). Taking a crucial part in the manipulation of distribution, transportation defines the efficiency of product movements (Tseng et al., 2005).

There have always been and, undoubtedly, there will always be various alterations of the business environment that make it more and more important to measure the costs related to distribution (Ray, 1975) and in a more and more efficient manner. Accordingly, transportation seems to be the most affected activity within the distribution, as transport conditions are changing rapidly and it is important to respond to those changes immediately.

Williams (1978) claims that possessing the knowledge of actual transportation costs, business organizations may adjust their distribution strategy and consider:

- Cessation of sales in areas with high transportation costs
- Reducing the frequency of deliveries in high cost areas
- Comparison of current delivery costs with the prices offered by transport suppliers

Moreover, by discovering the real costs of transportation, companies can reveal various deficiencies in the vehicle utilization, route and load planning (Williams, 1978).

Gilmore (2002) states that there appears to be an increasing recognition of the role played by logistics and, more particularly, transportation excellence in attaining superior world-class supply chains. Accordingly, many modern companies possess transportation costs as substantial components of their extensive supply chains and, most importantly, of overall company spend (Gilmore, 2002). Transportation costs deserve prudent treatment and should be managed in the most efficient way. Overall, transportation should be performed with minimal costs, while at the same time meeting certain service and quality levels (Crainic & Dejax, 1993).

In conclusion, the section shed the light on the view of cost components often included in logistics and distribution fields of business operations. Notwithstanding, cost data on all the identified types of costs have to be aggregated and stored, enabling the ability of further analysis, interpretation and transformation into cost information so valuable for modern business organizations. As a matter of fact, databases are claimed to be suitable tools applicable exactly for such purposes. Cost database, on one hand, may serve as a solid practical tool for cost reporting and analysis, and, on the other hand, contribute to the cost management function.

### **2.3.3. Cost database**

The data flows circulating in the modern world are truly umpteen and manifold. Besides, over time the number and complexity of data flows tend to rapidly increase. Hence, practically any business organization, nowadays, faces the challenge of organizing and managing the data, which would ensure the most efficient business operations. Importantly, cost data is not an exception.

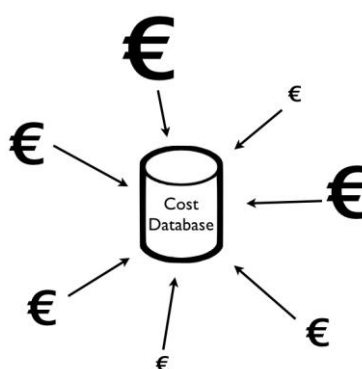
First and foremost, database is an IS. It is an organized collection of data, which can be easily accessed, managed and used (Rouse, 2006). In other words, database is an organized structure designed for storing data. Practically, database is not necessarily computerized, as shelf with folders or set of notebooks can also become a database. However, modern business reality increasingly requires the use of electronic databases

as amounts of data currently tend to be enormous and, thus, impractical to be organized other than by the means of computers. Today, it is hardly possible to imagine the functioning of financial, industrial and any other business organizations without using databases. Without databases businesses would simply sink in today's data avalanche.

Practically, all kinds of management problems require timely and reliable data in order to find an intelligent solution (House & Jackson, 1995). According to Pickett & Elliott (2007), it is historical data that can assist when making decisions on future actions of business organization. By examining the past performance, companies can strive for improvement through learning from their previous mistakes and from drawing on the examples of their positive results (Pickett & Elliott, 2007). However, to build any kind of conclusion for the future use, the past should be organized and analyzed in a certain way, for example, with the use of databases.

Historical data can be defined as any kind of past facts about a business organization, for instance, historical costs, prices, revenues or earnings (InvestorWords, 2012). In order to reach better results, historical data has to be collected, normalized and analyzed, so that it can be turned into practical information and be used for decision support (Pickett & Elliott, 2007). Cost data is not an exception.

Historical cost data might be collected and organized into a cost database with the later possibility of converting the database into a strong knowledge that can be used to drive various enhancements (Pickett & Elliott, 2007). Figure 27 presents the basic logic of the cost database concept.



*Figure 27. Cost database.*

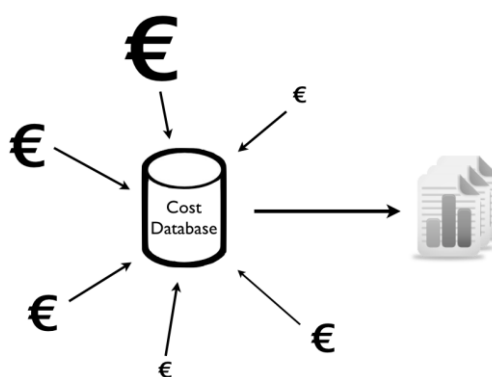
Practically, building and maintaining a cost database that is able to provide reliable cost information can turn out to be a daunting task for the majority of business organizations (Honsinger et al., 2010). Indeed, very seldom business organizations possess adequate procedures of collecting historical cost data, appropriate systems to store it and methodologies to analyze it (Pickett & Elliott, 2007). However, the role of these sometimes critical things cannot be neglected.

Unfortunately, in reality, the ideal dataset for the cost database is usually not readily available (Honsinger et al., 2010). Therefore, primarily, the ground elements of any cost database as a type of IS shall be determined by the (Ray et al., 1979):

- User's need
- Data availability
- Cost of data retrieval
- Value of data to the user

First, the need for actual cost data should be identified, clarifying who and for what kind of purposes will use the cost data. Second, cost data availability should be examined, defining how easily cost data could be revealed and collected. Third, a clear balance between the cost of data retrieval and cost data value for users should be found. Finally, the extent to which the cost data will be valuable for users should be assessed and conclusions have to be made.

The availability and proper use of cost database can greatly increase the confidence of decision-making (Honsinger et al., 2010). Moreover, by using the resulting knowledge base, various cost-related deficiencies can be revealed as well as areas for improvement can be highlighted. Practically, the existence of cost database enables the generation of various reports on, for example, product, customer or area levels (Barrett, 1982). Such use of cost database is demonstrated in Figure 28.



*Figure 28. Cost database use.*

In the end, cost database, indicating the input inflows of cost analysis, apparently needs a constant modification, re-adjustment and update (Ray et al., 1979). Holmstrom (1988) points that database necessarily has to be updated. There is simply no such a thing as 'static' database. New data should be constantly added to the historical base with frequency dependent on the particular case (Holmstrom, 1988). Importantly, cost databases can be exploited in order to store the data on distribution costs.



Generally, management of distribution ought to sustain and continuously develop cost advantages (Stainer, 1997). In order to do so, business organizations have to have a clear understanding of their distribution costs. However, in reality, especially in the scope of distribution, cost information might appear to be rather fragmentary, scarce and coarse (Pirttilä & Hautaniemi, 1995) and thus have to be revealed.

Distribution databases that exist in many companies tend to maintain various quantity data, but not the actual cost data (House & Jackson, 1995). Therefore, this study introduces the concept of distribution cost database. Distribution cost database can be defined as an organized storage of actual distribution cost data. The use of distribution cost database for the creation of valuable cost information by the means of reports, is believed to contribute greatly to the cost management practice in the field of distribution. Moreover, importantly, as distribution cost database provides the access to cost information, it can facilitate the cost visibility, discussed previously. Figure 29 summarizes the latter idea and other things mentioned in this section.

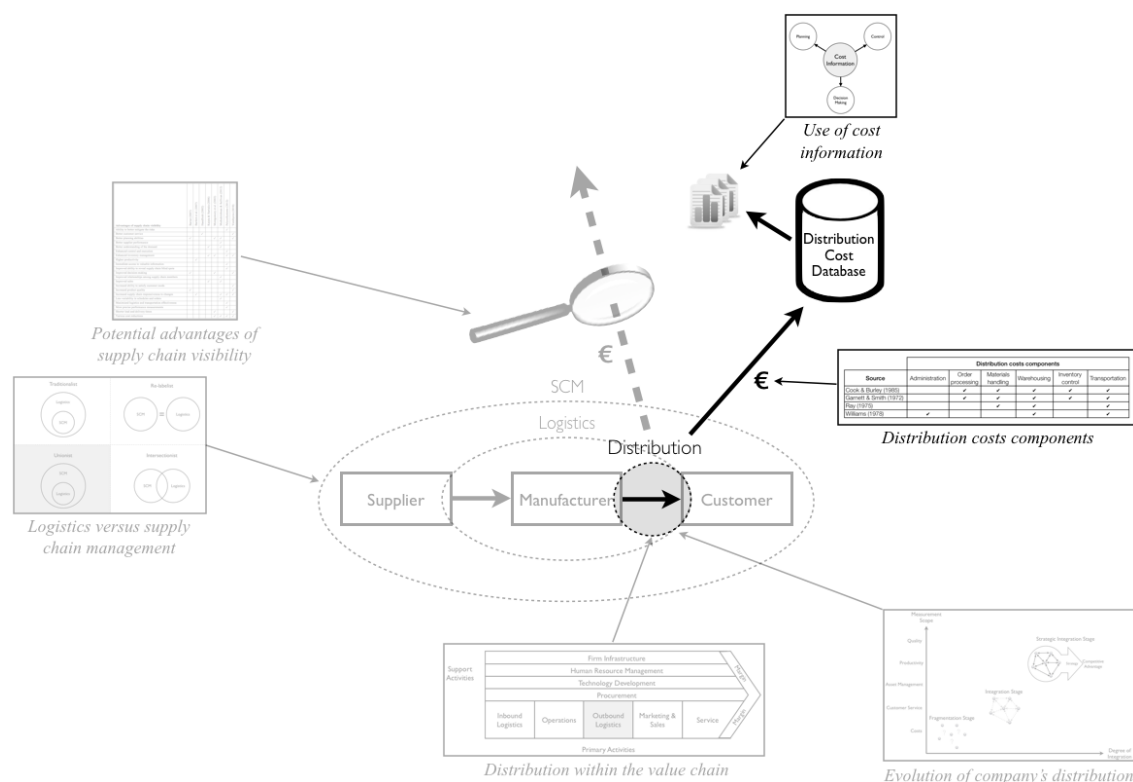


Figure 29. Distribution cost database and its use for creation of cost information.

Interestingly, distribution cost visibility might be desirable not only externally to the business organization, facing the other members of the supply chain, but also internally, for example, among the units of the single corporation. On that occasion, it is suggested to pass a matter to the concept of subsidiary.

## 2.4. Subsidiary

Parent organizations and their dispersed subsidiaries operating under a common umbrella are indeed increasingly important parts of modern business landscape (Harzing & Feely, 2008). On the whole, the capability of the companies to leverage the business potential of their dispersed assets can be stated as the primary strategic imperative (Bartlett and Ghoshal, 2002). Accordingly, management of subsidiaries is lately receiving more and more attention.

This section, first, defines the term subsidiary and presents the main reasons for subsidiary creation. Second, relationships between parent and subsidiary are discussed. Finally, the concept of visibility into subsidiary operations is introduced and developed towards cost visibility into subsidiary distribution.

### 2.4.1. Defining subsidiary

The term ‘subsidiary’ practically pierces the pertinent literature and, unfortunately, is rather oftentimes left without a precise definition being deduced. Therefore, for the sake of conceptual clarity, existing denotations of the term are next presented (Table 7).

*Table 7. Definitions of subsidiary.*

Source	Definition
Birkinshaw & Hood, 1998	Subsidiary is any operational unit under control of the other company
Birkinshaw & Pedersen, 2009	Subsidiary is a individually separate and distinct value-adding activity
Gordon, 2005	Subsidiary is a company that to a certain extent is owned by another company
International Accounting Standard 27, 2009	Subsidiary is a business entity, including an unincorporated entity such as a partnership, which is necessarily controlled by another business entity, known as the parent
W3C, 2001	Subsidiary is a business organization of which control and majority ownership rests with another, single organization

Evidently, subsidiary is merely characterized by an external control from the side of some other entity, which is bound to subsidiary by the ties of ownership. Subsidiary is claimed to function only with regards to imperatives identified by the parent (Birkinshaw & Hood, 1998). Therefore, one of the foremost characteristics of the subsidiary is that it is an entity under control of a parent (PwC, 2011). However, it does not specifically mean that parent owns the absolute whole of subsidiary’s equity.

Ongoing the definition process, it often happens so that subsidiary if considered in the context of MNC is by all means referred to as foreign to parent organization, thus, emphasizing the mandatory geographical dispersion (Homburg et al., 2012). However, in such case literature specifies a term of foreign subsidiary as an entity, separately incorporated from the parent organization, and, importantly, domiciled in a foreign country (OCC, 2004). For this thesis, subsidiary will be understood as certain business organization, operating under control of parent organization and connected to it by the ties of ownership. Importantly, any findings on subsidiary, developed in this thesis, are similarly applicable to the foreign subsidiary if the context of MNC is used.

Predominantly, companies start as solely domestic organizations and only after some time period make a decision towards expanding (Kamal, 2011). According to Chartier (2009), subsidiaries, as definite organizational make-ups, have long been known as parts of companies, increasing corporate landscape when structural growth was inevitable. In this vein, following reasons for subsidiary creation might be identified (Chartier, 2009):

- Certain transactional needs that involve third party organizations
- Legal issues requiring domestic entity of foreign corporations to conduct business in a foreign country

Moreover, parent organizations frequently use subsidiaries in order to mitigate some risks or preserve themselves from various legal issues (Chartier, 2009). In other words, the stated reasons are transaction-, risk- or legal-based. Undoubtedly, more reasons to create subsidiaries could be adduced.

Additionally, reasons for forming a subsidiary could be geographical, historical or when parent organizations are seeking for flexibility (Ttara, 1997). First, geographical reason means a simple need for expanding operations geographically through a separate entity. Second, historical reason may imply, for example, that along the history a subsidiary appeared as a result of some acquisition or consolidation. Finally, seeking for flexibility means that organization may will to clean out its core competence and delegate the secondary functions to a subsidiary. In the end, there is a set of basic reasons why parent organizations decide to create subsidiaries (Figure 30)

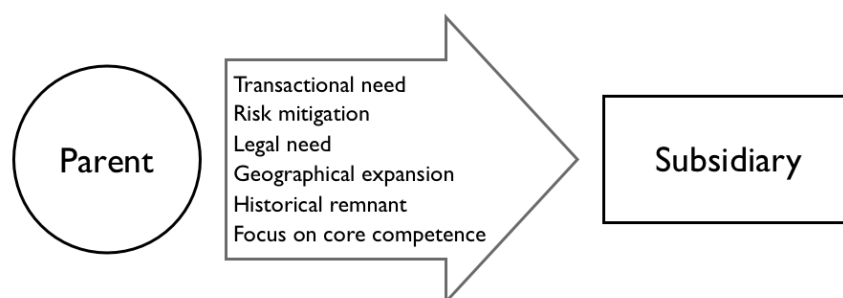


Figure 30. Basic reasons for subsidiary creation (Chartier, 2009; Ttara, 1997).

Nevertheless, above-depicted set of reasons might be still incomplete. Certainly, some other less frequently occurring grounds for subsidiary creation might exist in reality. However, when for one or another reason the subsidiary is finally established, parent and subsidiary organizations get involved into complex relationships.

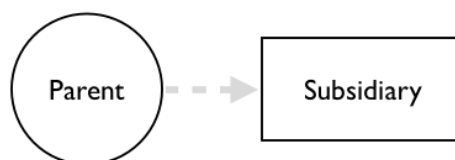
#### **2.4.2. Parent-subsidiary relationships**

Parent-subsidiary relationships have already been studied for a long time and by many researchers (Martinez & Jarillo, 1989). The studies are usually aimed at understanding such characteristics of parent-subsidiary relationships as centralization, formalization, coordination and control (Birkinshaw, 1997). However, this part of the thesis does not seek for detailed examination of parent-subsidiary relationships, but rather intends to facilitate the general understanding of its essence.

Generally, parent-subsidiary relationship is formed by one or more chains of business organizations connected through a controlling ownership by a common parent (Vlasek, 2010). Ameguide (2009) notices that parent-subsidiary relationships have one basic underlying principle. On one hand, parent organization is not able to make all the decisions, as it does not acquire the entire set of required knowledge or resources. On the other hand, it cannot delegate the complete decision-making to the subsidiary as the interest of subsidiary might differ from that of parent or corporation as a whole (Ameguide, 2009). Maintaining the proper balance of decision-making focus within parent-subsidiary link is highly important.

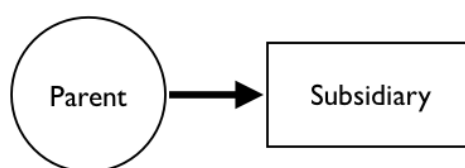
The latter discussion raises the question of subsidiary autonomy as an important factor of parent-subsidiary relationships. Autonomy in this case refers to the division of decision-making authority between parent and subsidiary (Garnier, 1982). Interestingly, Harzing (2000) distinguishes three levels that represent the extent to which parent and subsidiary organizations might be dependent: independence, dependence and interdependence. These levels characterize a state of integration within the corporation and, thus, are important in understanding the nature of parent-subsidiary relationships.

First, independence implies that subsidiary is not or hardly dependent on the parent, so that subsidiary functions almost like an independent business organization (Figure 31). Accordingly, on this level parent organization is confronted by a challenge of maintaining control in order to be able to line up subsidiary's operations with the overall corporate strategy as decisional functions are to a considerable degree delegated to the very subsidiary (Luo, 2005).



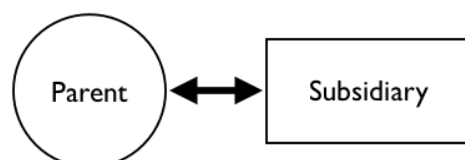
*Figure 31. Independence level of parent-subsidary relationships.*

Second, dependence indicates that subsidiary is mainly or completely dependent on the parent and is forced to operate under full parental control (Figure 32). The majority of decisional functions in this case are performed by the parent. Subsidiary can be characterized as a follower of parent's will.



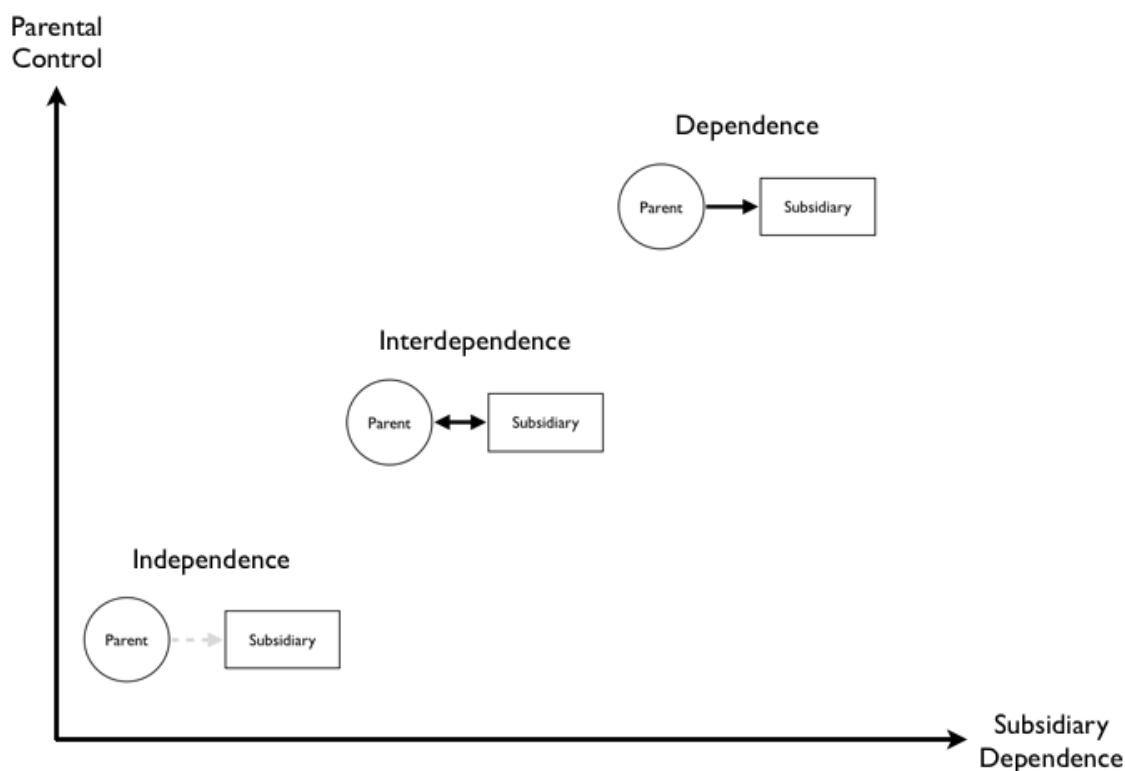
*Figure 32. Dependence level of parent-subsidary relationships.*

Finally, interdependence means that parent and its subsidiary or subsidiaries form the parts of an interdependent network and, generally, are all mutually dependent (Figure 33). As matters affecting one party of parent-subsidary relationships may as well affect the other, there is a need for the management of each party to understand the management of the other (Rubin, 2006). Decision-making is shared and business parties do listen to each other for the sake of mutual success and success of the corporation.



*Figure 33. Interdependence level of parent-subsidary relationships.*

All the above-mentioned levels of parent-subsidary dependence could be found in modern business reality (Harzing, 2000). Developing the framework of Harzing (2000), these three dependence states of parent-subsidary relationships might be as well used in order to reflect the controlling abilities of parent organization towards its subsidiary or subsidiaries (Figure 34). Control shall be defined here as an aggregate of activities or mechanisms exploited in order to obtain information about decisions and operations (Muringaseril, 2007).



*Figure 34. Subsidiary dependence and parental control.*

First, at the independence level the extent of subsidiary dependence is zero or minimal, so are the parental control abilities. Second, at the interdependence level parental control is adequate and justified as business entities are working hand in hand. Third, at the dependence level, the control extent is maximal and parent is taking a complete care of the subsidiary. Importantly, Figure 34 does not imply that parental control is anyhow lower on the interdependence level than on the dependence level, but it rather means that, when interdependent, parent controls the subsidiary sufficiently and if needed.

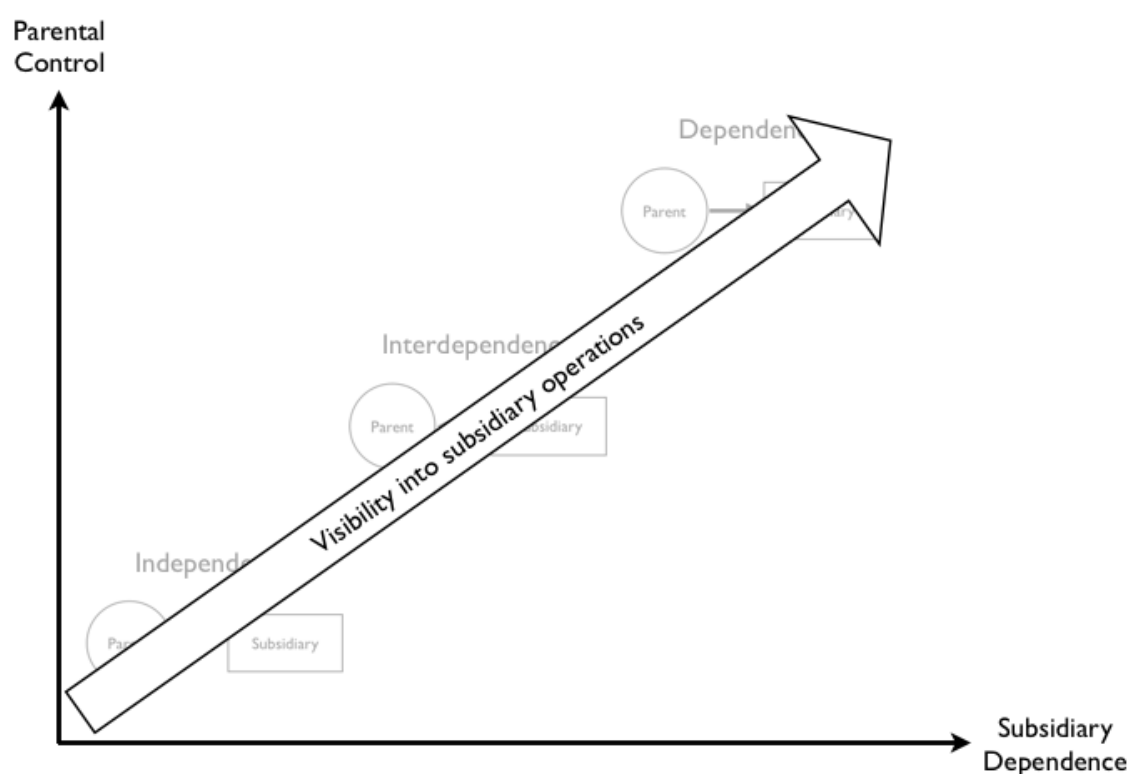
In conclusion, controlling abilities of parent organization towards its subsidiary might be seen as one of the determinants of parent-subsidiary relationships. Presumably, subsidiaries in a differentiated corporation possess heterogeneous arrays of information (Foss & Pedersen, 2002), which in the entirety intermittently happen to be out of parent organization's reach, thus often questioning the visibility into subsidiary operations for the parent organizations.

#### **2.4.3. Visibility into subsidiary operations**

It is extremely important for the parent organization to sustain a detailed comprehension of its subsidiaries' affairs (Estrada et al., 2011). Subsidiary-related informational blindness inevitably leads to managerial inefficiencies of various natures. Obscured character of data about processes occurring inside the subsidiary available to the parent organization or its incompleteness hinders the ability of thorough parental control.

Moreover, efficient knowledge sharing within the company is regularly stated as one of the main capabilities promoting the competitive advantage (Blomkvist, 2012).

Generally, the issue of visibility into subsidiary operations is stated to be a challenge for most companies (Explore Consulting, 2010). Oftentimes, parents are exposed to a challenge of motivating their subsidiaries to actually share the required information (Foss & Pedersen, 2002). However, such information sharing could be seen from subsidiary's viewpoint as a rather unattractive activity and sometimes even be considered as tantamount to losing some extent of independence or autonomy. Referring to the above-deduced relation between parental control and subsidiary dependence, one might conclude that while moving from the independence level of parent-subsidiary relationships towards dependence, the extent of visibility into subsidiary operations tends to grow (Figure 35).



*Figure 35. Growing visibility into subsidiary operations.*

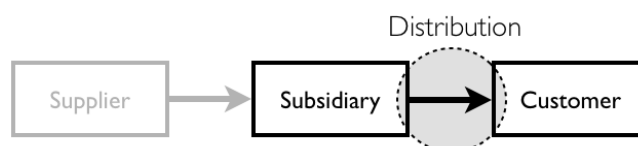
First, at the independence level, visibility into subsidiary operations hardly exists or is truly minimal. Second, at the interdependence level, the extent of visibility into subsidiary operations can be characterized as sufficient and adequate. Finally, at the dependence level, parent has a complete visibility into subsidiary operations.

In order to reach the streamlined parental control over subsidiary and adopt corporate strategic alignment, the liaison parent-subsidiary should be gradually developed into a relationship of “closeness” (Reilly et al., 2012). Recalling the interdependence state,

such “closeness” would guarantee the subsidiary operating efficiently and through the prism of parental supervision. Accordingly, this kind of relationship is considered as indeed mutually beneficial for both subsidiary and its parent, and implies the processes of tight information sharing and visibility of operations.

Researchers repeatedly question if and how the performance of subsidiaries can be improved (Chang et al., 2012). The abovementioned visibility of information suggests that particular data is accessible and, thus, is transferred either from parent or from subsidiary unimpededly and in the most efficient way. Accordingly, placing the concepts of visibility and knowledge transferring on the same footing, they could be claimed as imperative to subsidiary performance (Delios & Beamish, 2001) and, therefore, to performance of corporation as a whole.

An ability of corporation to produce and then efficiently transfer the knowledge from parent to subsidiary or the opposite way could be indeed considered as crucial for competitiveness in a modern business world (Kogut & Zander, 1993). Correspondingly, developing managerial practices, processes or tools that would enhance subsidiary-parent or vice versa information transfers as well as guarantee the visibility of required information should be treated as extremely important (Yamao et al., 2009). Exactly the same words are widely applicable to the information regarding subsidiary’s distribution, which in this case is the part of the supply chain where products travel from the subsidiary to the customer (Figure 36).



*Figure 36. Subsidiary’s distribution*

Latter discussion leads to the development of the visibility into subsidiary distribution concept. Indeed, many modern business organizations, unfortunately, possess limited visibility into their own distribution (Harvey & Wolfe, 2008) and, importantly, distribution of their spread subsidiaries. Provided that, visibility into subsidiary distribution is currently more of a need than a luxury. Moreover, apart from general understanding of subsidiary’s distribution pattern, parent organization might be pursuing visibility into subsidiary distribution costs, which gives existence to the concept of cost visibility into subsidiary distribution.

Lastly, the earlier speculations on using distribution cost database as an enabler of cost visibility could be now stretched onto the parent-subsidiary context. Indeed, aggregating the subsidiary’s distribution cost data into a distribution cost database and its further transformation into valuable cost information may enable the cost visibility into



subsidiary distribution. Figure 37 demonstrates this logic as well as includes the ideas developed in the course of this section.

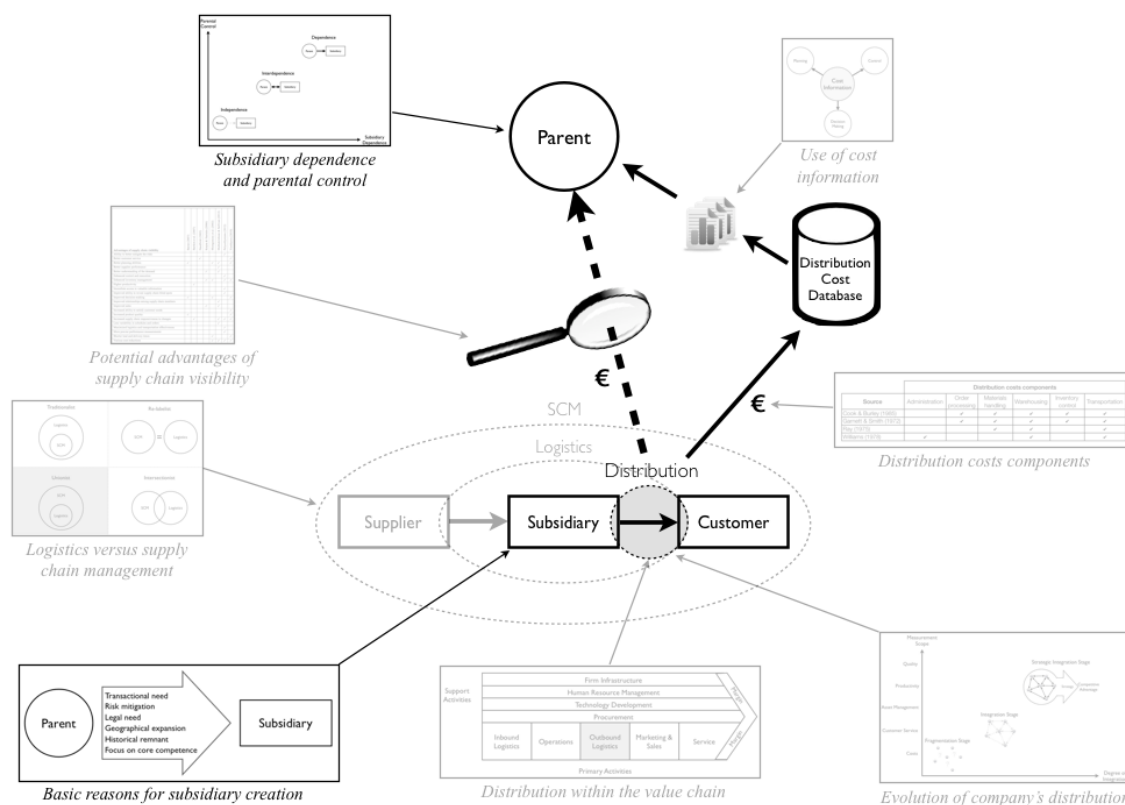


Figure 37. Enabling cost visibility into subsidiary distribution.

Reaching a sufficient extent of cost visibility into subsidiary distribution is believed to significantly enrich the understanding of the parent organization over the distribution activities conducted by its subsidiary, reinforce parent's controlling abilities as well as give the opportunity to attain the strategic integration of subsidiary's distribution.

## 2.5. Cost visibility into subsidiary distribution

This study presents the idea that by building a subsidiary distribution cost database and turning subsidiary distribution cost data into subsidiary distribution cost information in a form of various reports, parent organizations might obtain important distribution cost information on their subsidiaries and, therefore, reach the cost visibility into subsidiary distribution. Figure 38 demonstrates the final theoretical framework and combines the visual representations of main concepts discussed throughout the chapter.

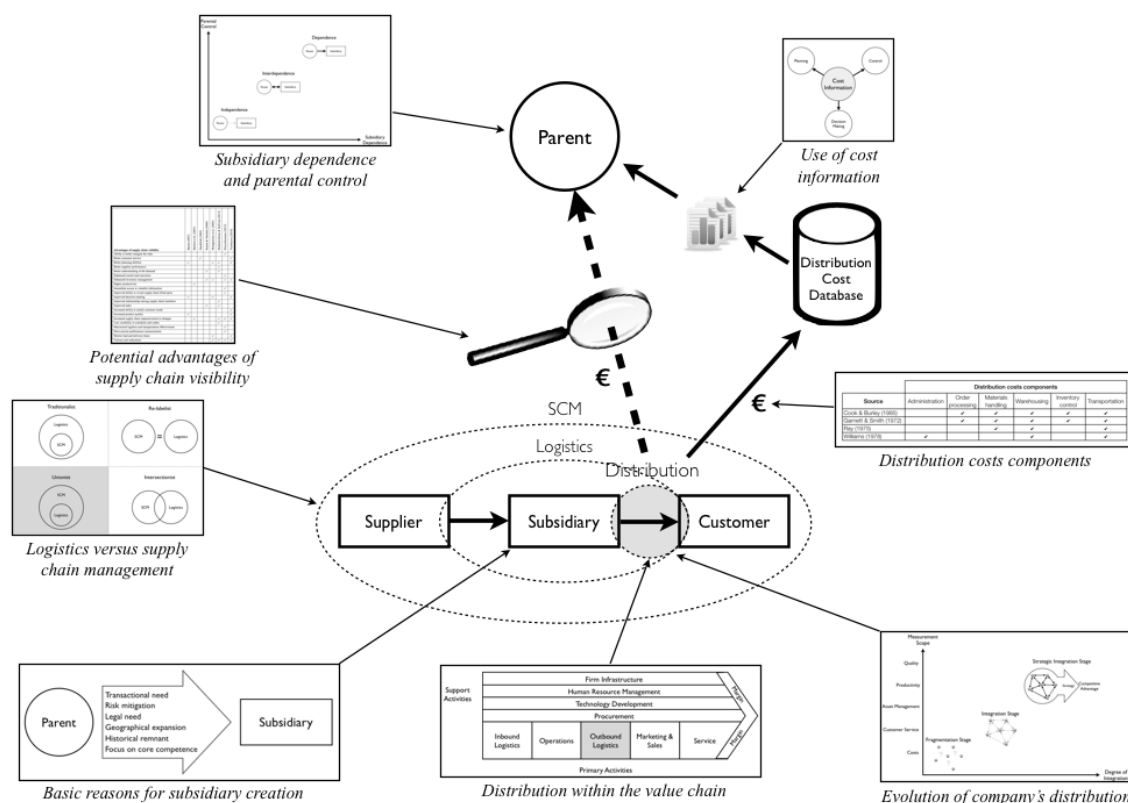


Figure 38. Final theoretical framework.

To recapitulate, supply chain represents the sequence of organizations, including their facilities, functions and activities, which are engaged in production and delivery of goods or services (Soni & Kodali, 2002; Stevenson, 2008). Unlike the SCM that covers the whole supply chain (Stevenson, 2008), the scope of logistics involves the part of supply chain directly surrounding the very business organization (Cavinato, 2000; Hollier, 1993; Johnson & Wood, 1999; Tillanus, 1997) and, therefore, logistics is a subset of SCM. This fact indicates the viability of unionist approach to relationship between logistics and SCM (Halldorsson & Larson, 2004).

Logistics can be divided into inbound or internal logistics and outbound or external logistics (Porter, 1998; Tillanus, 1997). The latter is oftentimes referred to as distribution. Distribution refers to the post-production part of logistics, outward from the end of assembly line and till the final customer (Crainic & Dejax, 1993; Ray et al., 1979; Stern et al., 1996). Proper distribution practice has potentially advantageous impact on the overall functioning of the business organization (Tseng et al., 2005).

Moreover, distribution is essentially a primary activity within the value chain of business organization (Porter, 1998) and is claimed to contribute significantly to gaining competitive advantage (Bowersox & Daugherty, 1992; Caputo et al., 2006; Rider & Ostrom, 1993). Similarly to the evolution of logistics, evolution of distribution in the company follows a path from fragmentation to a complete strategic integration (Bowersox & Daugherty, 1992).

Visibility of information in business represents the general ability to access and share certain information (Caridi et al., 2010). SCV stands for the ability to collect, process and use specific information related to the functioning of the supply chain (Lamming et al., 2001; Tohamy et al., 2003; Zhang et al., 2008; Harvey & Wolfe, 2008, Hultman & Axelsson, 2006). Business organizations tend to pursue SCV as its attainment potentially provides certain advantages (Barratt & Oke, 2007; Bartlett et al., 2007; Handfield, 2002; Kaipia & Hartiala, 2006; Montgomery et al., 2002; Muthukrishnan & Sullivan, 2012; PelycoSystems, 2012; Vorobyeva, 2010). Cost visibility is a type of SCV that indicates nothing else than visibility of cost information (Hultman & Axelsson, 2006; Lamming et al., 2001). Furthermore, distribution cost visibility is then the visibility of cost information regarding the distribution.

Cost is essentially a sacrifice of resources (Williams, 1997), required for some particular business activity and represented in monetary value. Costing provides an understanding of actual costs incurred in various business actions and their outcomes. Possessing comprehensive, accurate and timely cost information is vital for today's companies striving for business success (Everaert et al., 2008). Cost information is particularly important for planning, control and decision-making (Barriere-Varju, 2012). Cost information on distribution is not an exception and is similarly important.

In reality, distribution includes a variety of cost components (Cook & Burley, 1985; Garnett & Smith, 1972; Ray, 1975; Williams, 1978). Concept of database, indicating an organized collection of data (Rouse, 2006), can be used as the tool for cost reporting and analysis as well as to provide the basis for further cost management. Correspondingly, it can be used in order to aggregate and store the cost data (Honsinger et al., 2010; Ray et al., 1979), which later can be transformed into valuable cost information by the means of reports (Barrett, 1982; Pickett & Elliott, 2007). Cost information provided by the cost database is claimed to enable cost visibility. Similarly, distribution cost database is in power to provide distribution cost visibility.

Subsidiary is a business organization, operating under control of some parent organization and connected with it by the ties of ownership (Birkinshaw & Hood, 1998; Birkinshaw & Pedersen, 2009; Gordon, 2005). When for certain reason parent organization decides to establish a subsidiary (Chartier, 2009; Ttara, 1997), both parties get involved into complex relationships (Ameguide, 2009; Luo, 2005; Reilly et al., 2012) that can be characterized by the extent of dependence and parental control (Harzing, 2000). Interdependence stage of parent-subsidiary relationships is believed to be the most beneficial for both parties and implies tight information sharing and, consequently, information visibility.

Even though reaching the adequate and sufficient level of visibility into subsidiary operations is claimed to be a challenge (Foss & Pedersen, 2002), such visibility is

considered as crucial for the overall efficient and competitive performance of the corporation (Kogut & Zander, 1993). Similar words are applicable to visibility into subsidiary distribution and distribution costs, in particular. Finally, when pursued by parent organizations, cost visibility into subsidiary distribution can be reached by the means of using subsidiary distribution cost database.

In the end, the final theoretical framework, presented and described above, was built based on multiple concepts and ideas deriving from a variety of sources (Figure 39).

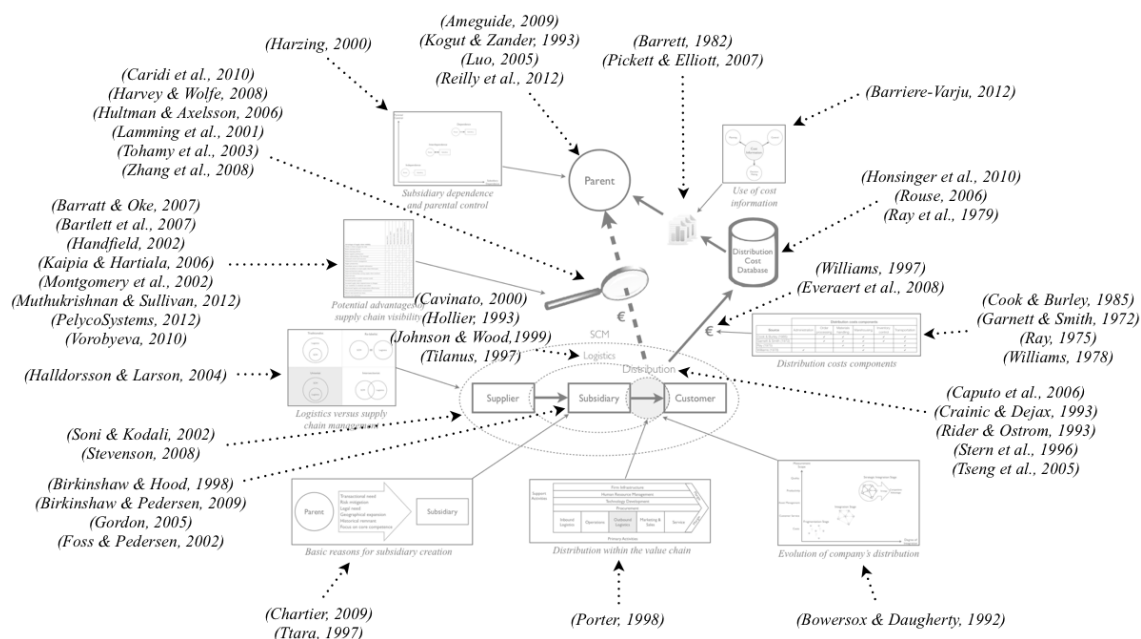


Figure 39. Final theoretical framework with main sources.

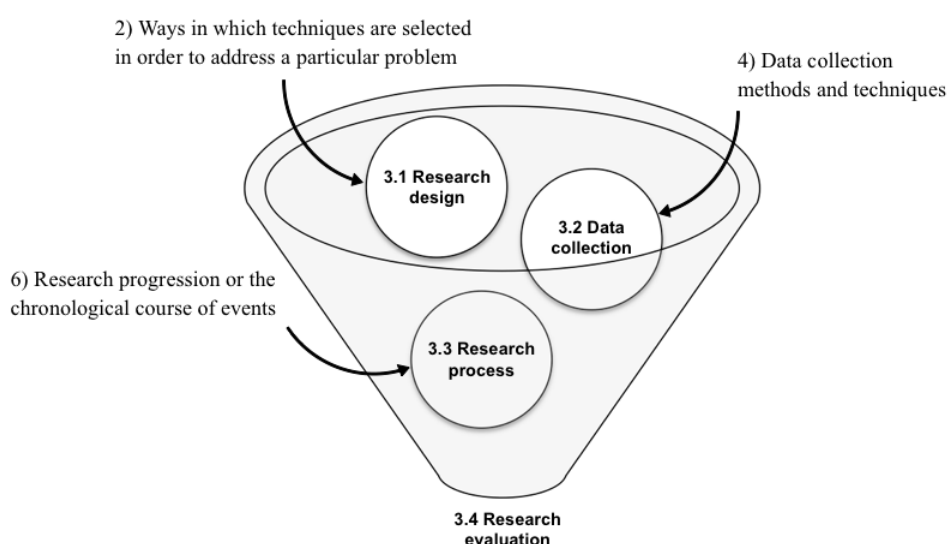
This theoretical framework describing the idea of reaching cost visibility into subsidiary distribution by the means of distribution cost database is used further in the empirical part of the thesis by its application to a real case. However, preparatory to that, the grounds of research methodology have to be discussed.

### 3. RESEARCH METHODOLOGY

Lehaney & Vinten (1994) claim that in management research the term ‘methodology’ is oftentimes used without clear definition. Such lack of the term clarity, unfortunately, might become the reason for misunderstandings. Generally, ‘methodology’ may appear in a variety of contexts, meaning (Lehaney & Vinten, 1994):

1. Ways in which hypotheses turn into theories
2. Ways in which techniques are selected in order to address a particular problem
3. Ways in which the very problems are chosen
4. Data collection methods and techniques
5. Ways in which variables for a model are chosen and how consequently the reality is simplified
6. Research progression or the chronological course of events

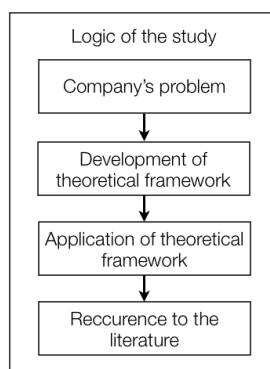
In practice, these understandings can be combined or used separately. The choice of meaning behind the term ‘methodology’, therefore, turns out to be critical for each particular study. Therefore, for this study, research methodology serves as a combination of second, fourth and sixth meanings from the list above. Moreover, such choice is reflected in the logic of the chapter (Figure 40).



*Figure 40. Logic of the Chapter 3.*

Apparently, first three sections of the chapter discuss the methodological aspects of the study. Final section though provides a general evaluation of the research.

The study presented in this thesis follows certain logic (Figure 41). Generally, the building blocks of this study are to a considerable extent chosen in compliance to the fact that the initial problem was provided by the case company. Following, in order to address the given problem, based on reviewed literature the study develops certain theoretical framework. The theoretical framework is then applied to reality. Finally, the study importantly provides recurrence to the literature.



*Figure 41. General logic of this study.*

In the end, it is exactly the research methodology that enables complete functionality of the study logic and consistency of its results. The thesis now moves on to a description of peculiarities of the used research design.

### **3.1. Research design**

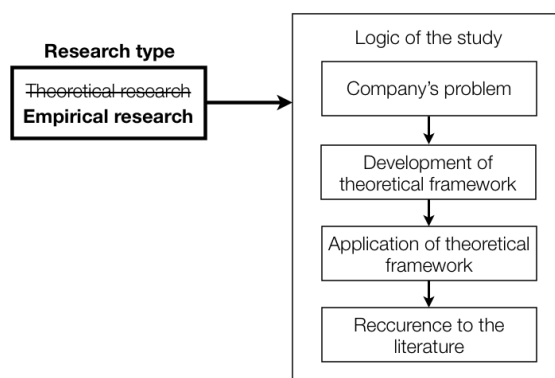
Research is primarily a process and it requires a systematic setting. In the most general sense, research design provides an overview of key characteristics of the research and so defines its character. These key characteristics of the research should guarantee the best possible way to address the problem of the study. Importantly, it is the problem that should determine the research design, but not the opposite way.

Furthermore, following discussion on research design or key characteristics of the research facilitates the positioning of the research used in this particular study relative to others. In terms of the research presented in this thesis, research design basically describes what particular type of research the study utilizes, what the intention behind the research is and which research strategy is actually implemented.

#### **3.1.1. Research type**

Generally, management research literature differentiates between studies using either theoretical or empirical research. On one hand, study using theoretical research investigates the hypothetical truth and draws general theoretical conclusions. On the other hand, study using empirical research involves empirical data gathering and analysis, followed by the reporting of findings and conclusions (Minor et al., 1994).

Furthermore, study using theoretical type of research often implies vast textual and conceptual examinations, while the study using empirical research in the field of business and management tends to involve practical interactions with real people. Interestingly, any study of which research is being empirical still necessities a rather profound theoretical setting. Finally, the study presented in this thesis essentially utilizes an empirical research type (Figure 42).



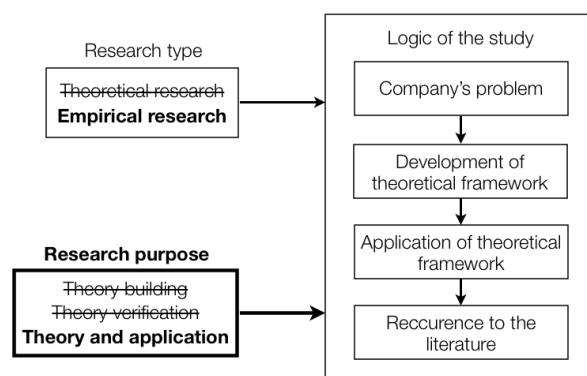
*Figure 42. Research type in this study.*

Indeed, in the view of actuality and practical character of the problem provided by the case company the study inclines towards using the research of empirical type. In the best tradition of empirical research, the study is conducted in the context of real company, involves the collection of empirical data, its analysis and reporting of the findings. In the end, the profound theoretical setting of the research is enabled by vast literature review and consequent formation of the theoretical framework.

### **3.1.2. Research purpose**

As been decently remarked by Soni & Kodali (2012), as a rule, in terms of the empirical research, one of the two basic purposes might be pursued. Based on the empirical data gathered, the study can develop own theory or it can apply and verify some already existing or newly proposed theory (Soni & Kodali, 2012). In other words, empirical research is generally carried out either with the purpose of theory building or with the purpose of theory verification.

On the one hand, theory building represents a systematic documentation of the actual practice and consequent search for various novel relationships and regularities between actual practice and theory (Flynn et al., 1990). On the other hand, theory verification is nothing else than the use of empirical data for theoretical hypothesis testing (Soni & Kodali, 2012). Interestingly, the research of this study serves neither of these two purposes, but could be rather classified as theory and application (Figure 43).



*Figure 43. Research purpose in this study.*

Indeed, empirical research carried out in this study does not aim at advancement of some abstract theory or verification of some theoretical hypotheses. As the logic of the study suggests, the purpose of the empirical research used in this study is the development of theoretical framework with accordance to the particular company's problem and using generated empirical data, and following application of this theoretical framework to the actual case. Moreover, the study in the end intends to refer the empirical results back to the literature.

### 3.1.3. Research strategy

On a general basis, there is a variety of research strategies that could be potentially exploited in order to conduct a research. Though, usually five following types of research strategies are used (Yin, 2008):

- Experiment
- Archival analysis
- Survey
- History study
- Case study

First, an experiment allows constructing experimental conditions (Weijun, 2008), which could be altered under thorough control of the researcher in order to adjust the results. Second, archival analysis implies the study of existing archival data for the purposes of revealing some facts valuable for fulfilling the research objective. Third, survey as research strategy represents a deductive approach and gives a significant control of research process (Weijun, 2008) as usually implies standardized procedures. Fourth, history study refers a retrospective analysis of historical facts that allows understanding of how some developments have proceeded. Finally, the case study research strategy addresses the complex subjects that contemporary take place in reality.



The main interest of this study is to develop a practical tool enabling cost visibility into distribution of subsidiary for the parent organization. Research addresses the real situation and problem that happen to occur within the actual multinational company. Therefore, the case study was chosen as a primary research strategy (Figure 44).

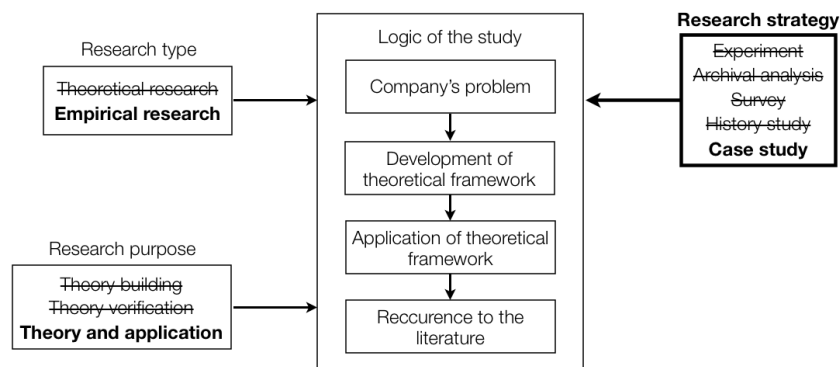


Figure 44. Research strategy in this study.

Case study is claimed to be one of the most powerful research strategies in the field of management (Voss et al., 2002), especially when research has immense reference to the reality. By the essence, case study is significantly contributive to understanding of some real and complex phenomena by using empirical data as a basis, but not for proving some already conceived theories (Gummesson, 1993). Case study is an ideal strategy when a holistic and comprehensive investigation is required (Feagin, 1991).

Furthermore, case study often emerges as a suitable research strategy when innumerable factors and entangled interlinks among them do not let other simple and unambiguous research strategies as well as quantifications to be applied (Gummesson, 1993). A running operation, to which the researcher is exposed in case study research, is like an enigma to the researcher (Coughlan & Coughlan, 2002). On one hand, operations can be completely visible and reachable while, on the other hand, they can be extremely difficult to reveal.

Moreover, case study might be carried out from the inside of the actual organization, indicating the field research. Field research in management might be defined as a systematic study based on collection of the actual data, either qualitative or quantitative, inside the real organization (Edmondson & McManus, 2007). Conducting field case study in management implies being exposed to real problems, creative insights of employees at all the organizational levels as well as various other complex contextual factors of actual cases (Voss et al., 2002).

Finally, the study presented in this thesis is essentially a field research. In the course of the study the researcher had a chance to participate in the actual daily operations of the case company and be actually involved in the business processes. In this vein, the research was carried out from the inside of actual organization.

## **3.2. Data collection**

Research could be defined as collection of data, information and facts in order to advance the knowledge (Shuttleworth, 2008). Even though such simplistic notion hardly could be applied in the scientific context, it is still able to highlight the importance of the data collection in the research.

This section, first, sheds light onto the general methods of data collection used when conducting research. Second, the data collection methods used in this study are presented. Finally, the collected data is described and classified.

### **3.2.1. Methods of data collection**

Management science overall exhibits a wide range of qualitative and quantitative research approaches (Currall & Towler, 2002). Generally, the adherence towards qualitative or quantitative approaches has long been a subject of intense discussions in management science circles (Karami et al., 2006). However, when talking specifically about the case study research in management, qualitative approach and qualitative methods of data generation often tend to prevail (Gummesson, 1993).

Moving on to the actual methods of the case study research that are usually exploited in order to obtain the data from sources, following five methods could be identified (Gummesson, 1993):

- Using existing material
- Questionnaire surveys
- Qualitative interviews
- Observation
- Action science

First, the researcher might choose to exploit the method of using existing material. Under existing material one understands everything that is importantly carried out by other media than human being. Therefore, the researcher might apply, for example, to various books, reports, articles, presentation slides, minutes of the meetings, archival documents, letters, brochures, organizational charts, memos or films.

Second, the method of using questionnaire surveys is often associated with the quantitative approach, however, it might be used in support of qualitative approach in case studies. Similarly, even though the idea behind surveys is primary quantitative, their design, implementation and interpretation are merely qualitative. Moreover, adding open questions into the survey may intensify its qualitative character. Method of questionnaire surveys is often treated as highly formalized and standardized.

Third, the researcher might decide to use the method of qualitative interviews. As opposed to the previously mentioned method, qualitative interviews appear to be more informal and unstructured, thus they often turn into in-depth interviews, going beyond the obvious matters. The questions asked usually do not follow any certain pre-established order as well as the answers are commonly open-ended. This fact, however, does not anyhow imply that the method of qualitative interviewing is unsystematic.

Fourth, the method of observation includes direct observation as well as participant observation. Participant observation, as opposed to the direct observation, requires immense fieldwork and is usually applied in the scope of field research. Observations in management case study usually take place in a natural context of studied phenomena and, generally, go beyond the words and numbers, including non-verbal aspects or whatever cues a situation might provide.

Finally, action science is usually treated as the most demanding, but at the same time, the most far-reaching method of data generation in case study. Essentially, this method might involve all the previously addressed methods, however, it requires the fulfillment of yet another dimension – the total involvement of the researcher. Indeed, the deep involvement in management case study can be founded on the fact that a person, conducting the study, is, for instance, both a researcher and an employee or external consultant of the business organization.

Practically, in order to reach the best possible results of the case study, these methods are oftentimes used in various combinations (Gummesson, 1993). In fact, the use of multiple methods of data collection in case research is claimed to increase the reliability of data being gathered (Voss et al., 2002). Finally, different methods possess their own merits and drawbacks, and therefore should be chosen carefully and with precise accordance to the nature of phenomena being studied.

### **3.2.2. Methods of data collection used**

Relying on the above-discussed set of case study data generation methods, for the purposes of this study, a combination of three methods was exploited (Figure 45). The methods used include the use of existing material, qualitative interviews, and action science. These methods were chosen due to the specificity of data in demand and in general conformity with the needs of the study.

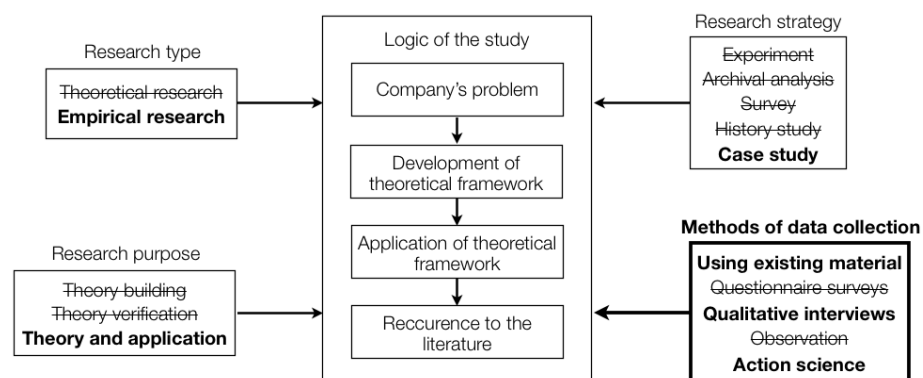


Figure 45. Methods of data collection in this study.

First, existing materials such as, for example, corporate information system (IS), financial reports on transportation costs or transportation registers were utilized in order to retrieve the required data. Second, in terms of using the qualitative interviewing method of data generation, series of semi-structured interviews was conducted as well as some informal conversations took place. Finally, in terms of action science method, the researcher conducted the study in a position of a thesis worker, which allowed the everyday exposure to the actual operations occurring in the business organization. Moreover, in course of the study, the researcher carried out practical tasks and duties, generally related to the fulfillment of the study objective.

### 3.2.3. Collected data

Generally, empirical research differentiates between three methodological approaches: quantitative, qualitative and mixed, according to the types of data being collected (Soni & Kodali, 2012). First, quantitative data represents the one, in which certain numerical value or physical unit is assigned to some variable. Second, qualitative data is the one that is not necessarily quantified, like facts or scaled answers. Finally, mixed data stands for the joint use of quantitative and qualitative data.

This study uses the mixed data gathering in view of the fact that the collected data has both qualitative and quantitative character. For example, the cost data on transportation unavoidably is represented by numerical values, such as the actual price of transportation, weight or self-price of products being transferred. However, such data in quantitative vacuum hardly has any practical value for the study if not supplemented by qualitative data, like from where to where the delivery occurred, who was the actual customer or what were the delivery terms.

In practice, any fact that is anyhow relevant to the course of events describing the studied phenomenon is a potential datum for the case study as the context is vastly important (Leonard-Barton, 1990). Furthermore, the generated data can come from primary or secondary source (Massingham et al., 2012). This fact exactly draws the differentiation between the primary and secondary data.

Referring to such a differentiation, in the course of this study, both types of data were generated. On one hand, primary data got its emergence mainly in result of qualitative interviews. On the other hand, secondary data was retrieved from a variety of sources:

- Financial reports on transportation expenses
- Transportation invoices
- Corporate IS (sales, purchasing, manufacturing and logistics modules)
- Transportation registers from LSPs
- Contracts with LSPs
- Descriptions of logistics processes procedures
- Other corporate documentation (brochures, booklets, responsibility reports, corporate magazines)

In the end, the data collected during this study can be classified as both qualitative and quantitative as well as both primary and secondary.

### 3.3. Research process

In the most general sense, research process describes the progression of the study and chronological order of the actions practically taken within the research. The main milestones of this study could be presented on the timeline as in Figure 46.

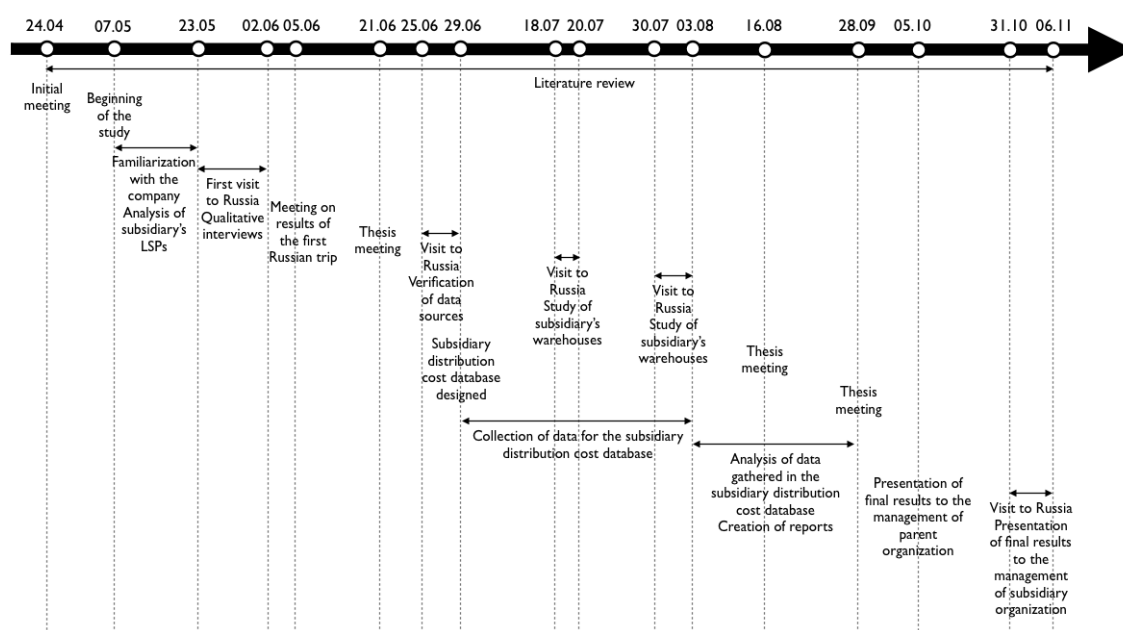


Figure 46. Timeline of the study.

The research process begins with the initial kickoff meeting that took place on 24.04.12 on the company's site. Two members of the management team were present at this meeting: Technology Director and Purchasing Manager. During this meeting the

problem, study objectives, main targets and other practical issues were discussed and agreed. Moreover, the date when the study actually starts was fixed for 07.05.12.

Management research is not a simple fact gathering process within some abstract theoretical vacuum (Worrall, 2002). On contrary, it is a balanced process of embracing theoretical and empirical grounds in order to generate new valuable knowledge. Accordingly, right after the initial meeting the process of reviewing relevant literature was initiated. Noticeably, literature was studied for the whole duration of the study.

During the standard procedure of introducing the company to new employees, the researcher got familiarized with the operational and organizational aspects of the case company. This was done in the period of 07-23.05.12 through a series of brief individual meetings with responsible employees. Facility tours were also provided so that the researcher could get acquainted with the peculiarities of, for example, production and warehousing. Moreover, an introductory training on the use of corporate IS took place with an emphasis on logistics module.

Within the same time period the researcher carried out an analysis of subsidiary's LSPs, based on the information available online. Such analysis facilitated better understanding of key players involved in subsidiary's distribution. The results were documented in the Microsoft Excel sheet with the structure presented in Figure 47.

Contact information					Available transport modes	Information on truckage			Geographical coverage		Other comments
LSP	Website	Phone	e-mail	Physical address		General information on trucks	Availability of refrigerator trucks	Availability of shipment tracking	Russia	International	

*Figure 47. Structure of subsidiary's LSPs analysis report.*

Then, in the period of 23.05-02.06.12 the first visit to Russia took place. Main tasks for the visit were formulated as to study the organization of order-to-delivery process as well as to find out the actual product flows. Accordingly, during this visit the researcher conducted a series of semi-structured qualitative interviews with the representatives of the subsidiary organization listed in Appendix 1.

All the interviews were pierced with the general topic of subsidiary's distribution. The questions for semi-structured interviews were practically prepared beforehand and in accordance with the position taken by the person in the organization, however, these questions served more as a reference then a guideline. The questions used for semi-structured qualitative interviews are presented in Appendix 2. Interviews led to the understanding and description of subsidiary's distribution processes such as order-to-delivery (Appendix 3) and import order (Appendix 4). Moreover, interviews facilitated general understanding of subsidiary's distribution and helped to identify key persons involved in distribution processes, so that further contacts could be more targeted.

In addition, according to Voss et al. (2002), in case study, organization's management usually finds it useful to have the matter analyzed systematically, provided, for instance, by the means of regular meetings. Those meetings often outline the areas already investigated as well as objectives for further study (Voss et al., 2002). Indeed, in the meeting held on 05.06.12 the results of the first Russian visit were presented to the management of case company and, particularly, to Technology Director, Purchasing Manager, Head of Purchasing and Business Controller. Valuable feedback was received and the tasks for future were discussed.

On 21.06.12 a first thesis meeting took place. Thesis meetings implied presentation of intermediate results and discussions on the progress of the study. The attendees of these meetings from the case company side usually involved Technology Director, Purchasing Manager and Business Controller. Appropriately, next thesis meetings were held on 16.08.12 and 28.09.12.

The researcher then identified main existing sources of data on subsidiary's distribution. Interestingly, in order to verify the reliability of data contained in the corporate IS and in financial reports, the researcher manually went through a sample of paper invoices received from subsidiary LSPs and bookkeeping. Such verification was done during the next visit to Russia, which happened in the period of 25-29.06.12.

Next, the structure and format of subsidiary distribution cost database were designed and the actual collection of data required for filling the subsidiary distribution cost database then proceeded. Importantly, subsidiary distribution cost database was completely built by the means of Microsoft Excel and basically represented a set of spreadsheets. Details of creation of subsidiary distribution cost database as well as its structure are presented in the following chapter.

During the next two visits in Russia, which happened on 18-20.07.12 and 30.07-03.08.12 the researcher conducted a study of subsidiary's warehouses. The arrangement, capacity, fullness and general functioning of the subsidiary's warehouses were studied. Moreover, detailed layout and product location were illustrated by the means of Microsoft Excel. Statistics on warehouses and their detailed layouts were reported to the management of the parent organization.

Following, the data gathered into the subsidiary distribution cost database was analyzed and turned into valuable reports on product and customer levels. The analysis of data was done with the use of standard tools provided by Microsoft Excel, while the reports were mainly compiled using Microsoft PowerPoint. Presentation-style reports were believed to be more explicit and visually appealing.

The daily interaction on the important issues of subsidiary's distribution and use of corporate IS was held with the Business Decision Support Analytic from subsidiary organization by the means of Skype. Moreover, during the study, in order to receive relevant information Skype chats were maintained with Logistics Specialist and Supply Chain Manager of the subsidiary organization, however, rather on the monthly basis. Correspondence with other employees addressed during the study was done via the e-mail. Moreover, conversations with the employees took place also in the informal settings, for instance, while traveling together or during the meal times.

Finally, the study findings were presented on two monthly management meetings, first in Finland on 05.10.12 to the management team of parent organization and then in Russia on 06.11.12 to the management team of subsidiary organization during the final Russian visit in the period of 31.10-06.11.12. The meeting on 06.11.12 signified the end of the study covered in this thesis. Eventually, the study took overall seven month and exactly 20% of the whole time researcher spent on the Russian sites of the company.

### 3.4. Research evaluation

To recapitulate, the problem of the study is provided by the case company and addressed by the development and application of the theoretical framework. The study essentially utilizes a research of empirical type. The purpose of used empirical research is neither theory building, nor theory verification, but rather theory and application. Case study was chosen as an applicable research strategy. Methods of data collection involved the use of existing material, qualitative interviews and action science. Finally, Figure 48 gives an overview of the research used in this study.

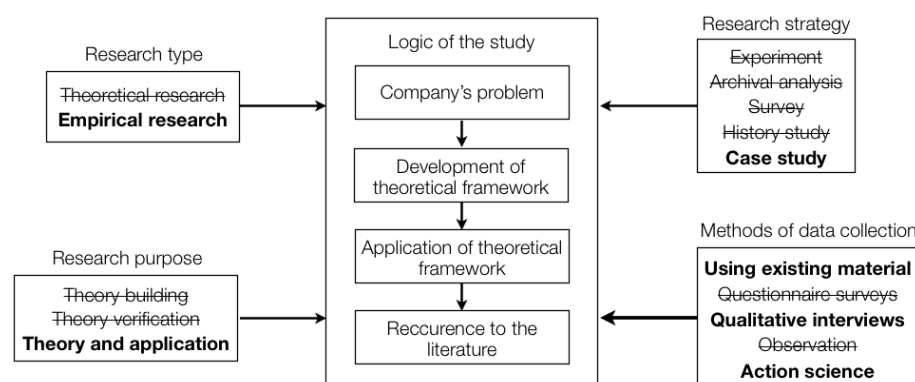


Figure 48. Research used in this study.

This section is an assessment of the research utilized in this study. First, importance of the research is explored. Second, research obstacles and potential sources of errors are revealed. Finally, validity and reliability of the research are discussed.



### **3.4.1. Importance of the research**

The operations of subsidiary organization possess great importance for the parent case company as the prospective potential of the subsidiary's market is treated as exceedingly high. Parent organization's management highly accentuated the importance of this study and was ready to support the research in every possible way.

Importantly, it has to be admitted that such kind of a study has never taken place in the case company. This fact, on one hand, amplified the complexity of the research and especially the data collection part but, on the other hand, signified the immense potential value received by the study findings.

Finally, the outcomes of this study are believed to facilitate the understanding of parent organization towards its foreign subsidiary's distribution, in general, and distribution costs, in particular. On that basis, the importance of research used in this study consists in the provided opportunity of the parent organization to increase visibility into the operations of its subsidiary and, in that way, reinforce parental controlling abilities.

### **3.4.2. Research obstacles and sources of possible errors**

As a matter of fact, the research utilized in this study could have had potential sources of errors that have to be acknowledged. The possibility of errors derives mainly from the character of collected data and peculiarities of data sources. First, mistakes could have emerged when interpreting secondary data from the document scans. The print quality of some transportation registers and invoices, unfortunately, left much to be desired. For that reason, visual recognition of some numerical data was hindered.

Second, human factor might have caused inconsistencies in data entries. This is applicable both to the content of secondary sources of data as well as to the content of subsidiary distribution cost database. Moreover, this particular cause of errors might have been related also to the largeness of data arrays involved into the research.

Finally, as this kind of study has never taken place in the context of the case company, initial distribution data 'poverty' could have caused data shortages and inexactitudes. However, in the end, it is believed that above-stated potential inconsistencies even if ever took place, were fairly insignificant and did not have any visible effect on the research conducted in this study.

### **3.4.3. Validity and reliability**

Reliability and validity are two most significant and fundamental attributes of practically any measurement (Miller, 2003), and can be applied in order to characterize both quantitative and qualitative researches (Golafshani, 2003). According to

Gummesson (1993), validity indicates how close to reality the researcher approaches and how well is he or she able to interpret it. Reliability though requires that the research gives the same results if repeated (Gummesson, 1993), indicating the accuracy of instruments or procedures used.

What comes to validity, one advantage of field research exactly utilized in this study is that outcomes are usually empirically valid as they evolve directly from the reality (Eisenhardt, 1989). Moreover, not to confuse with triangulated data, data triangulation implies the use of multiple sources of data in the same study for the purposes of validation (Hussein, 2009). This study actively uses different sources of data in order to describe and examine the same phenomena. For example, data on the actual deliveries conducted within the subsidiary distribution was obtained from the both parties involved in the process - subsidiary organization and LSPs. Furthermore, the data contained in the corporate IS - one of the primary sources of data for the research - was repeatedly verified on compliance with the reality, for instance, by manually calculating the actual number of pallets in subsidiary warehouses or by inspecting line-by-line the actual transportation invoices.

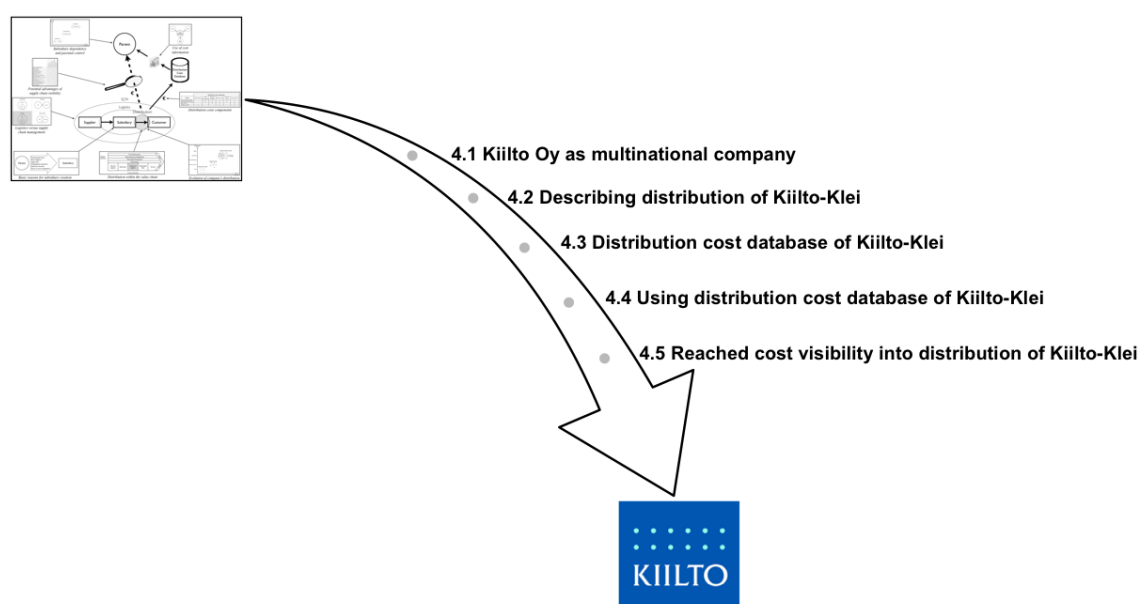
Lastly, the fact that both intermediate and final findings of the study were regularly reviewed by the organization management to a certain extent contributes to the validity. Repeated corrections and feedback provided by the organization managers regarding the results, on one hand, served as a means to eliminate the uncertainty and, on the other hand, to ensure that the research is measuring what it has to measure.

Reliability of research indicates the degree with which repeated examinations, taken under similar circumstances, will signify the same results (Lewis, 1999). The research exploited in this study uses both quantitative and qualitative approaches. On one hand, reliability of research in terms of quantitative approach is believed to be rather high. Quantitative data was obtained mainly from corporate IS and paper documentation and, therefore, anyone conducting same kind of research would end up with the same numbers and figures. On the other hand, what comes to qualitative part of the research, already the essence of qualitative data gathered implies strong dependence on researcher's own experiences, opinions and feelings. In that sense, it is believed that reliability of research used in this study is to some sizeable extent provided by the consistency, accuracy and scrupulosity of this thesis.

## 4. CASE: KIILTO OY

Chapter 4 represents the empirical part of this thesis. Developed in the Chapter 2, the theoretical framework that suggests the use of subsidiary distribution cost database in order to enable cost visibility into subsidiary distribution serves as a substratum for the empirical articulations of this chapter. In other words, in course of this chapter the theoretical framework is gradually applied to the real case.

Kiilto Oy is a well-established chemicals industry operator. Importantly, Kiilto Oy is a multinational company that operates using foreign subsidiaries, including the Russian subsidiary referred to as Kiilto-Klei. Kiilto Oy serves as the case company for this study. Logic of this chapter is provided by the consistency of theoretical framework's application (Figure 49).



*Figure 49. Logic of the Chapter 4.*

The chapter proceeds as follows. First, Kiilto Oy is derived from the context of Kiilto Family concern and described in terms of relationship with Kiilto-Klei. Second, the distribution of Kiilto-Klei is generally described and the distribution network is modeled. Third, the actual aspects of building the distribution cost database of Kiilto-Klei are discussed as well as the focus of this study on transportation costs is defined. Fourth, the usage of Kiilto-Klei's distribution cost database in order to build reports on various levels is exemplified. Finally, consequences of the reached cost visibility into Kiilto-Klei's distribution are discussed.

## 4.1. Kiilto Oy as multinational company

This section presents Kiilto Oy as multinational company, member of the Kiilto concern and examines the nature of relationship between Kiilto Oy and Kiilto-Klei. Figure 50 highlights the elements of the theoretical framework related to the following discussion.

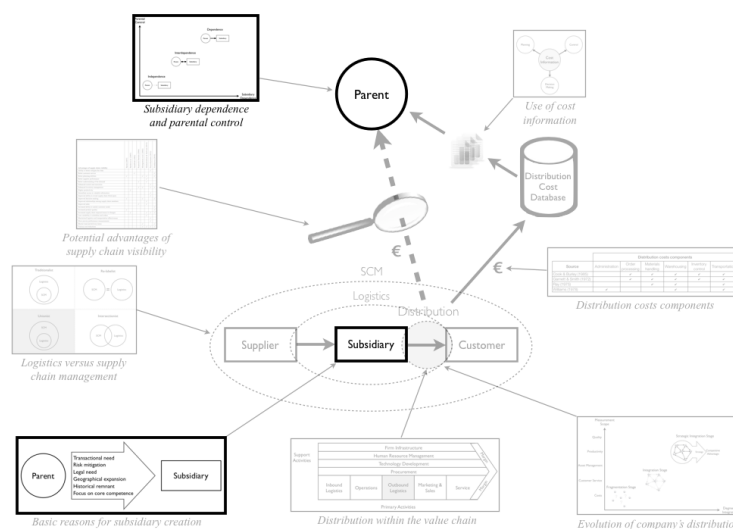


Figure 50. Elements of the theoretical framework referred in this section.

Importantly, this section aims to promote the positioning of Kiilto Oy within the business context and, thus, facilitate the understanding of the study focus.

### 4.1.1. Kiilto Oy as the member of Kiilto Family

*“Believe in the future, but do not forget to contribute to it!  
P.S. Finnish work pays off”* – states the Kiilto Family’s belief in the future of enterprise and Finnish labour.

Kiilto Family is a family-owned group of companies. Nowadays, Kiilto Family is truly an international expert in a wide range of industries. Kiilto Family has an annual turnover of about 150 million euros and counts some 800 employees altogether.

The bedrock of Kiilto Family – family ownership – makes a face of group and intends to establish the sense of security and assurance of continuity. The same family has owned Kiilto Family companies during its entire history. Companies operating under the concern umbrella proudly share the label of Kiilto Family member (Figure 51).



Figure 51. Member of Kiilto Family.

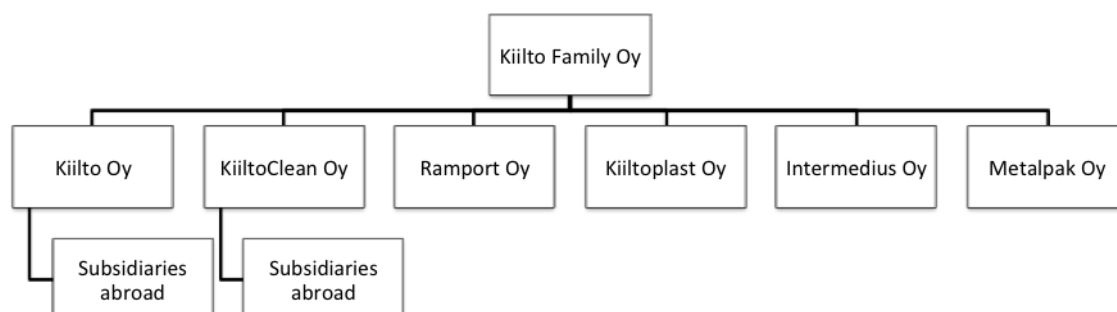
Kiilto Family forms an entity, which competently utilizes its versatile domestic and international know-how for the benefit of its customers as well as for the development of the whole group. Kiilto Family currently includes the following companies:

- Kiilto Oy (chemical products) and subsidiaries abroad
- KiiltoClean Oy (cleaning and hygiene products) and subsidiaries abroad
- Kiiltoplast Oy (plastic coating)
- Metalpak Oy (metal packaging)
- Intermedius Oy (accessories for footwear, textile, steel and mechanical engineering industries)
- Ramport Oy (marketing of articles for furniture and carpentry industries)

Extensive expertise and best practices are shared, without forgetting the specific characteristics of each member and industry. Therefore, the benefits from group synergies tend to increase the competitiveness of its members.

Kiilto Family builds and empowers its market position and financial competitiveness through its competence, reliability, cost-efficiency and close partnerships. Operational opportunities as well as development of family members are strongly secured by ensuring adequate business profitability and competitiveness. Moreover, Kiilto Family succeeds in realizing the strategy of controlled and steady growth, guiding its operations by the principles of permanence, responsibility and commitment.

Kiilto Family Oy is the parent company of the whole group. The objective of Kiilto Family Oy is to provide support for all the operations of the group. To fulfill this objective Kiilto Family Oy maintains and develops personnel, financial management, information management and communications processes so that they efficiently support the achievement of business goals by all the family members. The general group structure is illustrated in Figure 52.



*Figure 52. Structure of Kiilto group.*

The geography of Kiilto Family is indeed extensive. Parent organization and consequently the group administration is located in Lempäälä, Finland. The sites of group members and their subsidiaries are spread across Scandinavia and countries of Eastern Europe. Figure 53 demonstrates the geographical disposition of Kiilto Family.

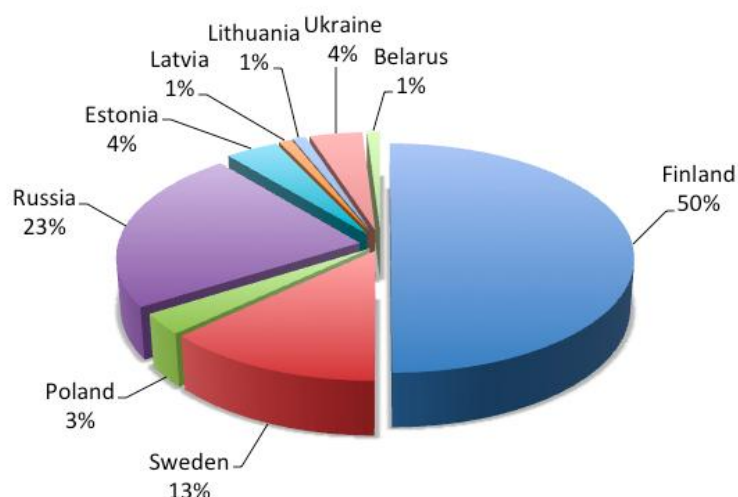


*Figure 53. Kiilto Family on the map.*

Kiilto Oy is an ancestor of the whole Kiilto Family and currently represents its largest member. Kiilto Oy, being a multinational company, operates in Finland and maintains subsidiaries in eight other countries. Russian subsidiary, which is in the focus of current thesis, contributes the most to the consolidated business of Kiilto Oy.

#### **4.1.2. Kiilto Oy and its Russian subsidiary**

Kiilto Oy happens to actively operate in countries other than Finland by the means of foreign subsidiaries. In fact, in 2011, half of Kiilto Oy's annual turnover was domestic, while the rest came from foreign countries (Figure 54).



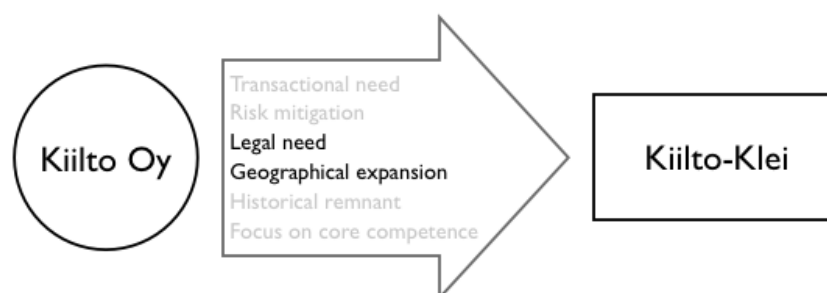
*Figure 54. Kiilto Oy: Turnover shares by countries in 2011.*

As apparent from the pie chart above, Russia represents the biggest foreign share of operations for Kiilto Oy. Indeed, Russian business has a great importance for Kiilto Oy and the prospective potential of the Russian market is considered as exceedingly high. In fact, Russian operations of Kiilto Oy are represented by three legal entities:

- “ZAO Kiilto-Klei”
- “OOO Kiilto-Klei Ramenskoye”
- “OOO Kiilto-Kaluga”

However, such solely legal differentiation does not have any significance for this study, as basically those entities work as one sheaf. In this thesis Russian subsidiaries of Kiilto Oy are collectively called as Kiilto-Klei.

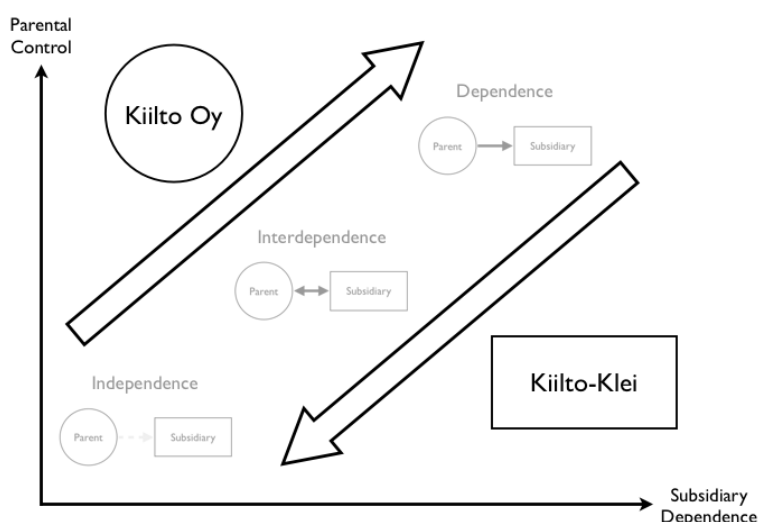
In the majority, Kiilto-Klei operations copy those of Kiilto Oy as, practically, the same principles of business functioning were initially transferred from the parent to the subsidiary. Referring to the reasons of subsidiary creation, mentioned in the Chapter 2, Kiilto-Klei as the foreign subsidiary of Kiilto Oy was founded back in 1995 due to the geographical expansion motives towards the Russian market as well as specific requirements of Russian legislation (Figure 55).



*Figure 55. Reasons for subsidiary creation: Case Kiilto.*

However, geographical expansion motive and legal need were definitely not the only reasons of subsidiary creation. Instead of, for example, opening a sales office, Kiilto Oy decided to build a whole new company and even local production in order to be closer to customers both geographically and in terms of understanding the market. Moreover, Kiilto Oy foresaw that such scheme of direct export could have various cost benefits as well as diminish the dependence on differences in current rates. Finally, Russian government these days was actively supporting any foreign investments.

Furthermore, what comes to the present relationship between parent and its subsidiary, definite positioning of Kiilto Oy and Kiilto-Klei in terms of subsidiary dependence and parental control correlation turns out to be rather complicated. Two sides constantly tend to incline towards contrary directions. On one hand, Kiilto-Klei already possesses considerable level of independence in the majority of business issues and seems to continue enforcing its autonomy even further. Though, on the other hand, Kiilto Oy pursuits increased parental control over its Russian subsidiary in attempt to decrease the extent of actual subsidiary's autonomy (Figure 56).



*Figure 56. Subsidiary dependence and parental control: Case Kiilto.*

A good example of such confrontation could be found when considering the objective of this thesis. The parent organization makes a decision to improve the visibility into distribution of its foreign subsidiary and in such a way enforce its parental control. Finally, regardless of the implicit misalignment of the interests, inherent to the majority of developed parent-subsidary bonds, case of Kiilto Oy and Kiilto-Klei is rather close to the interdependence type, though practically missing sufficient level of transparency from the subsidiary's side, for instance, in the field of distribution.



## 4.2. Describing distribution of Kiilto-Klei

This section provides a general overview of distributional activities, performed by Kiilto-Klei, that were identified in the course of this study. The section utilizes the part of theoretical framework related to the aspects of subsidiary distribution (Figure 57).

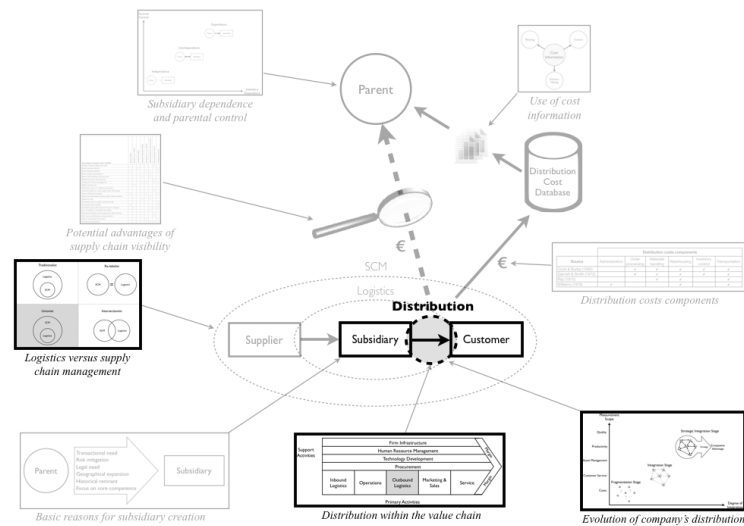


Figure 57. Elements of the theoretical framework referred in this section.

Interestingly, in pursuit of constituting the model of subsidiary distribution network, the so-called “layers” of subsidiary distribution pattern, indicating the types of deliveries actually taking place, are identified and described. The peculiarities of distribution of Kiilto-Klei as the Russian subsidiary of Kiilto Oy are described as follows.

### 4.2.1. Distribution of Kiilto-Klei

First of all, when trying to assess and compare the present distribution establishments of Kiilto Oy and Kiilto-Klei in terms of company’s distribution and measurement focus, the companies seem to be positioned in the opposite ends (Figure 58).

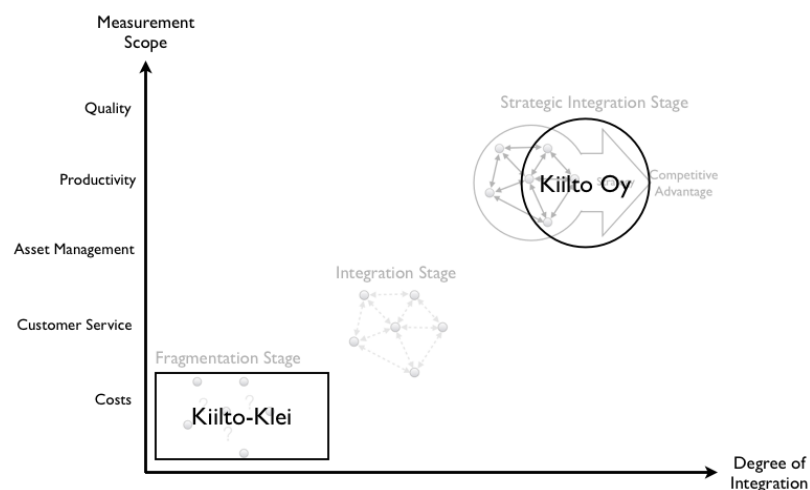
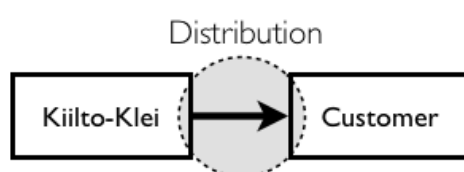


Figure 58. Company's distribution and measurement focus: Case Kiilto.

Kiilto Oy already actively utilizes its strong expertise and experience in distribution as a constituent of its business success, which, consequently, determines the complete width of applied measurement scope. In other words, the evolution of distribution in Kiilto Oy has already reached the strategic integration stage. On the contrary, Kiilto-Klei's situation is opposed as its distributional activities can be characterized as shattered and still rousing, what binds the measurements solely to the cost matters. Therefore, the evolution of Kiilto-Klei's distribution by the right could be identified currently as on the fragmentation stage.

Furthermore, this study focuses narrowly on the distribution and, practically, it means that the study primarily examines the movements of finished products towards the customers. Therefore, in the case of Kiilto-Klei distribution could be generally illustrated as in Figure 59.



*Figure 59. Distribution of Kiilto-Klei.*

However, when examining subsidiary's distribution within the context of MNC, such as Kiilto Oy, considering the channel from subsidiary to customer might appear to be not enough. Undoubtedly, there may be many various types of interaction also between the parent and its foreign subsidiary from the distribution point of view. In particular, parent and subsidiary may be mutually involved in some bipartite distributional processes, just like in the case of Kiilto Oy and Kiilto-Klei.

Nevertheless, in order to describe the subsidiary distribution first thing is to get an understanding of what it is composed or, in other words, what serves as the nodes of the distribution system. Accordingly, relative to the scope of this thesis, nowadays, Kiilto-Klei as the Russian subsidiary of Kiilto Oy counts for:

- Production unit (repackaging) and warehouse in Saint-Petersburg
- Production unit (adhesives) and warehouse in Ramenskoye
- Production unit (dry-mixes) and warehouse in Maloyaroslavets
- Regional warehouse in Yekaterinburg

Furthermore, the geographical disposition of the parent organization as well as the location of its Russian subsidiary's sites is captured in Figure 60.



Figure 60. Geography of Kiilto Oy and Kiilto-Klei.

Possessing such an extensive geography, Kiilto-Klei conducts a variety of distributional operations within Russia as well as is tied to the parent organization by the frequent import activities. However, prior to this study the general insight on the actual deliveries was sort of missing.

#### 4.2.2. Describing distribution pattern of Kiilto-Klei

First, Russian subsidiary is closely bound to the Finnish parent by import ties. Indeed, Kiilto-Klei orders Finnish products from Kiilto Oy for further direct realization or repackaging. These import activities represent the first “layer” of subsidiary distribution pattern - *international deliveries* between the parent and its subsidiary (Figure 61). Deliveries, in reality, are done from Lempäälä to Saint-Petersburg and to Ramenskoye.

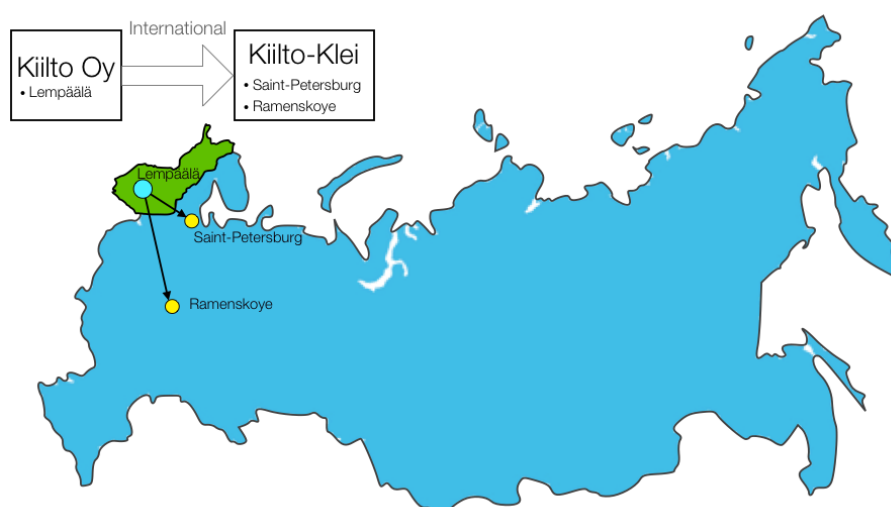


Figure 61. International deliveries.

Second, Finnish products as well as those produced in Russia are then transferred among four subsidiary warehouses. These operations represent the “layer” of *internal deliveries* and occur as demonstrated in Figure 62.

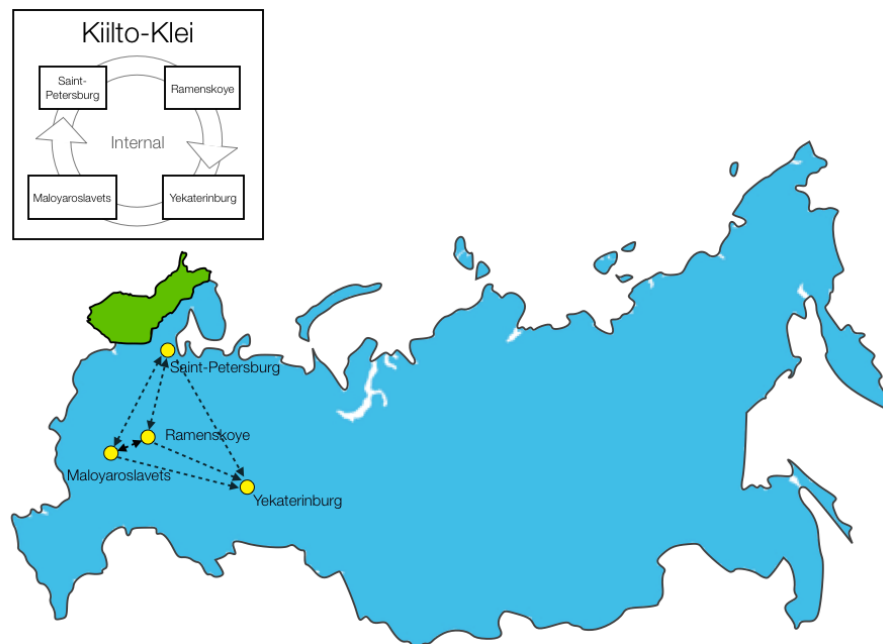


Figure 62. Internal deliveries.

Third, products leave the warehouses in order to reach customers. Even though customers are spread around the whole Russia, the majority is concentrated in Saint-Petersburg and Moscow. For that reason, two separate “layers” of *local deliveries* (Saint-Petersburg and Moscow) and *regional deliveries* (rest of Russia) could be identified. Notably, local deliveries happen only from Saint-Petersburg and Ramenskoye warehouses (Figure 63).

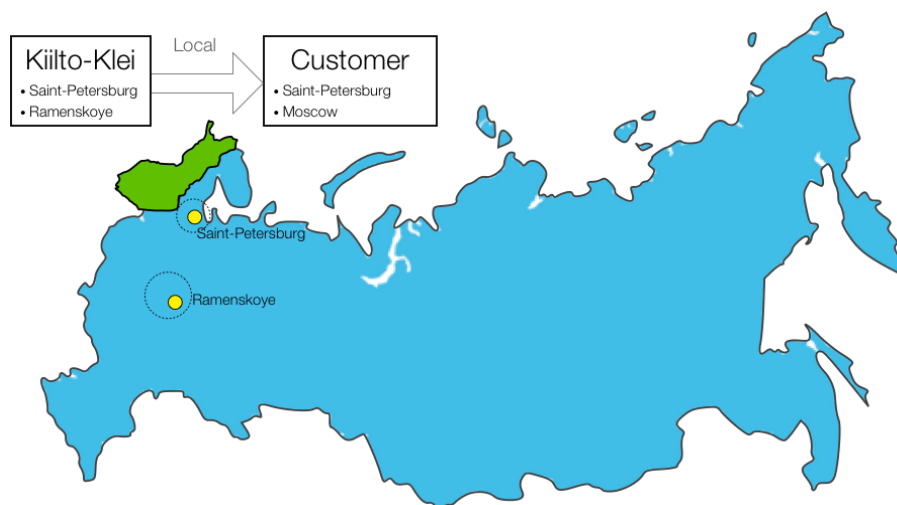


Figure 63. Local deliveries.

Regional deliveries are made from Ramenskoye, Maloyaroslavets and Yekaterinburg. Moreover, regional deliveries reach the customers that are spread all over the territory of Russia (Figure 64).

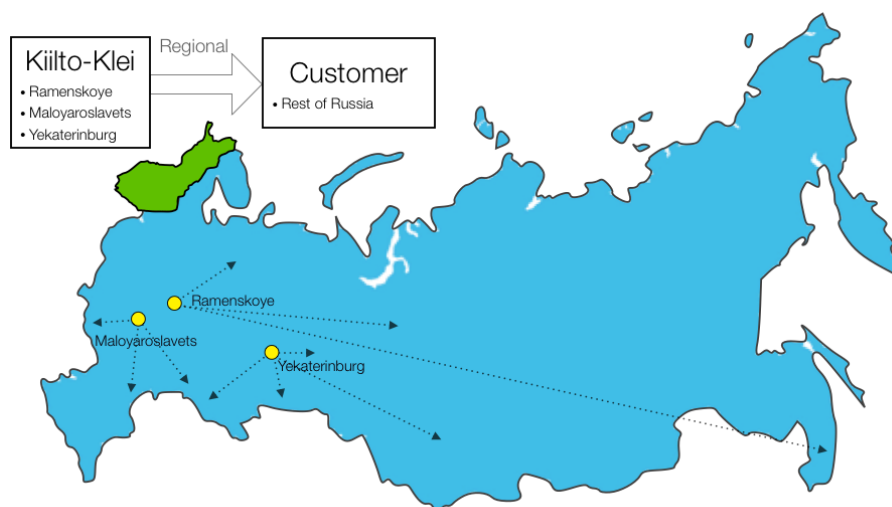


Figure 64. Regional deliveries.

Finally, these types of deliveries represent the main steps of distribution performed by Kiilto-Klei in order for finished products to actually reach the customers.

#### 4.2.3. Modeling distribution network of Kiilto-Klei

The four above-identified “layers” of Kiilto-Klei’s distribution could be brought together, forming a holistic distribution pattern (Figure 65). This pattern is essentially a schematic representation of all the distributional activities carried out by Kiilto-Klei.

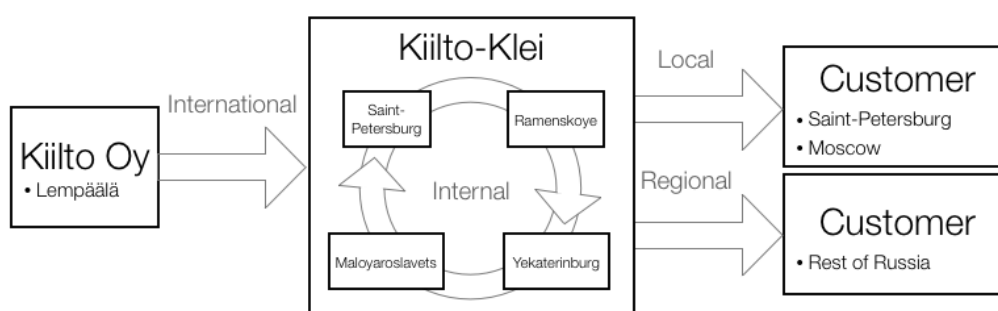


Figure 65. Distribution pattern of Kiilto-Klei.

Distribution network implies the main directions or channels of distribution that are in the use (Ray et al., 1979). Accordingly, Figure 66 shows the model of actual subsidiary distribution network in its geographical representation. Its primary purpose is to demonstrate in the visually appealing form how the distribution of Kiilto-Klei works in reality and how do the products actually travel.

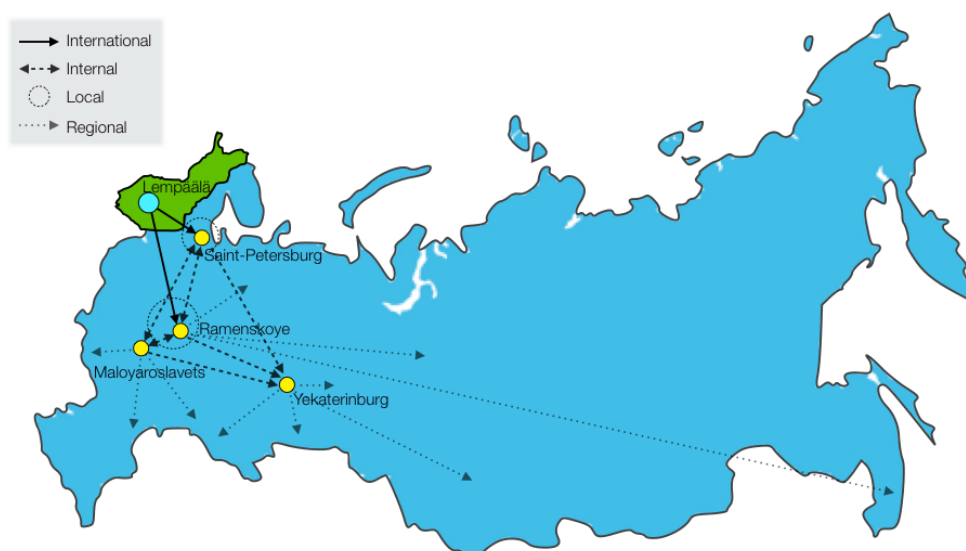


Figure 66. Model of Kiilto-Klei's distribution network.

Such classification of the distributional activities performed by Kiilto-Klei was, in fact, made possible based on the data collected in the course of current study. This data was accumulated by the use of subsidiary distribution cost database that is the subject of the following discussion.

### 4.3. Distribution cost database of Kiilto-Klei

This section sheds light on the process of building the Kiilto-Klei's distribution cost database performed in this study. Accordingly, the section refers to the part of theoretical framework dedicated to costing and distribution cost database (Figure 67).

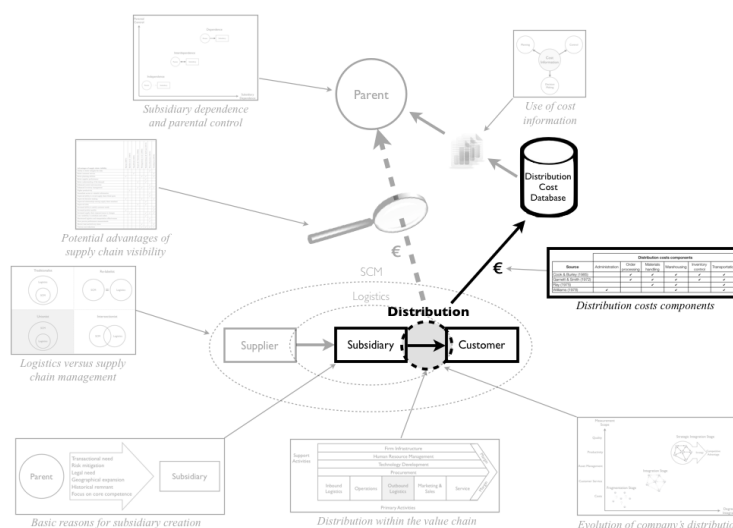


Figure 67. Elements of the theoretical framework referred in this section.

Undoubtedly, the character and content of subsidiary distribution cost database might be completely different, depending on each particular case. However, in this study, the need for data was determined with accordance to the demands of the case company.

### 4.3.1. Focus on transportation costs

The theoretical part of the thesis fairly claims that distribution is usually associated with the whole range of cost components. Depending on the source, distribution might include costs of administration, order processing, materials handling, warehousing, inventory control and transportation. Nevertheless, proceeding from the requirements initially set by the case company, this study focuses solely on the costs related to the transportation (Figure 68).

Source	Distribution costs components					
	Administration	Order processing	Materials handling	Warehousing	Inventory control	Transportation
Cook & Burley (1985)		✓	✓	✓	✓	✓
Garnett & Smith (1972)		✓	✓	✓	✓	✓
Ray (1975)			✓	✓	✓	✓
Williams (1978)	✓			✓		✓

Figure 68. Focus on the transportation costs.

Transportation costs in case of Kiilto-Klei practically imply the freight expenses. In other words, transportation costs represent the actual expenditures of Kiilto-Klei related to any transportation of the finished products. Being even more precise, transportation costs for the sake of current study represent the actual costs of deliveries as they are priced by transport companies and, consequently, paid for by Kiilto-Klei.

Continuing with the topic of costs, in general, Kiilto Oy cultivated to Kiilto-Klei its historical principles of costing. As a matter of fact, real businesses hardly ever utilize pure costing methods like they are described in books, so that usually companies tend to exploit some own variations or modifications of costing techniques. Case of Kiilto Oy and, consequently, Kiilto-Klei is not an exception.

Practically, the quantification of costs incurred in some particular product or, in other words, calculation of product's self-price happens as follows. First, the costs of raw materials and packaging used for the particular product are calculated with the highest precision. In Kiilto this part of the cost structure is called Material Price. Second, Material Price is multiplied to some certain value, depending on each particular product, so that other costs could be covered.

$$\text{Self-price} = \text{Material Price} \times \text{Multiplier}$$

Furthermore, for the purposes of this study and tracing transportation costs, in particular, it was agreed to apply the principles of full costing with a slight addition of ABC perspective in terms of distribution and transportation. Accordingly, Material Price exactly represents the direct manufacturing costs, while the multiplied part of the cost structure should indicate the overheads and direct manufacturing costs (Figure 69).

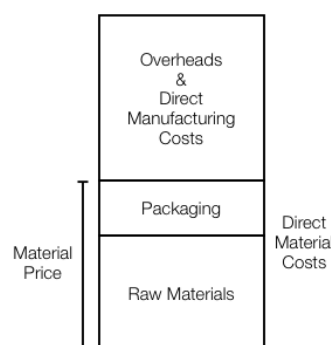


Figure 69. General product self-price structure.

Nevertheless, such self-price structure appears to be too generalized. In reality, Kiilto-Klei deals with the following three types of products:

- Russian products (produced in Russia by Kiilto-Klei)
- Finnish products (produced in Finland by Kiilto Oy and then imported to Russia)
- Finnish products repackaged in Russia (produced in Finland by Kiilto Oy, imported to Russia and repackaged by Kiilto-Klei)

Interestingly, these products have different costs incurred in their self-price structures. Figure 70 demonstrates what costs are involved in case of each product type.

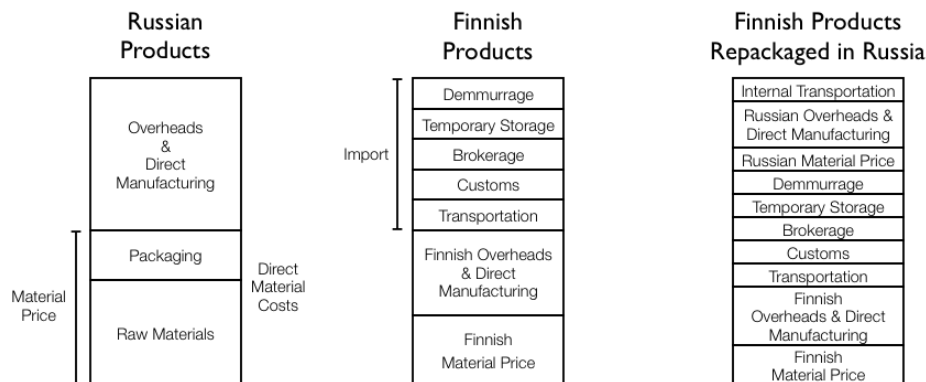
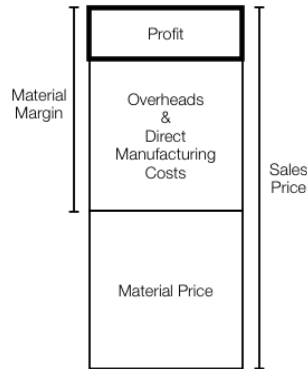


Figure 70. Product self-price structures.

First, Russian products follow the general cost allocation principle, so that Russian Material Price is multiplied to some value-based factor. Second, Finnish products include same kind of costs, but from the Finnish side of Kiilto Oy. Moreover, Finnish products contain the costs of import activities: demurrage, temporary storage, brokerage, customs and transportation. Finally, Finnish products repackaged in Russia involve basically the same costs as the Finnish products, plus the costs of activities related to the repackaging and internal transportation back and forth between the warehouse and repackaging facility.

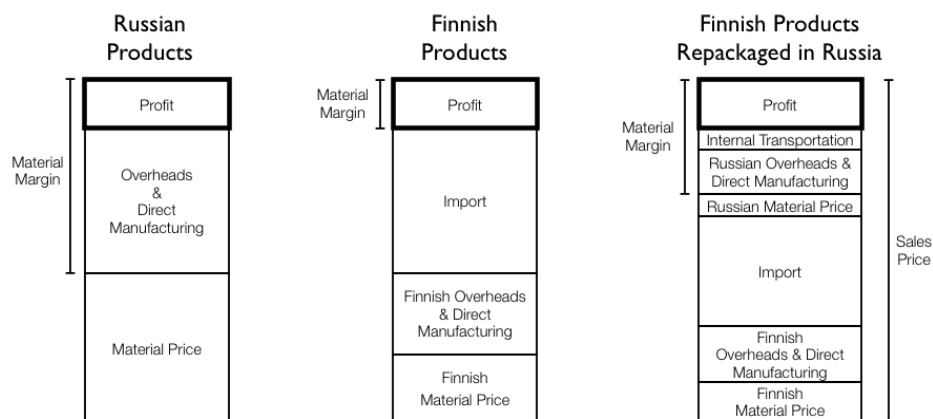


On top of that, whenever the actual sale occurs, in the most general sense, the product sales price comprises of the already discussed product self-price and some profit from the sale. Importantly, in Kiilto-Klei's case all the costs other than those included in the Material Price are combined with the profit represent the Material Margin (Figure 71).



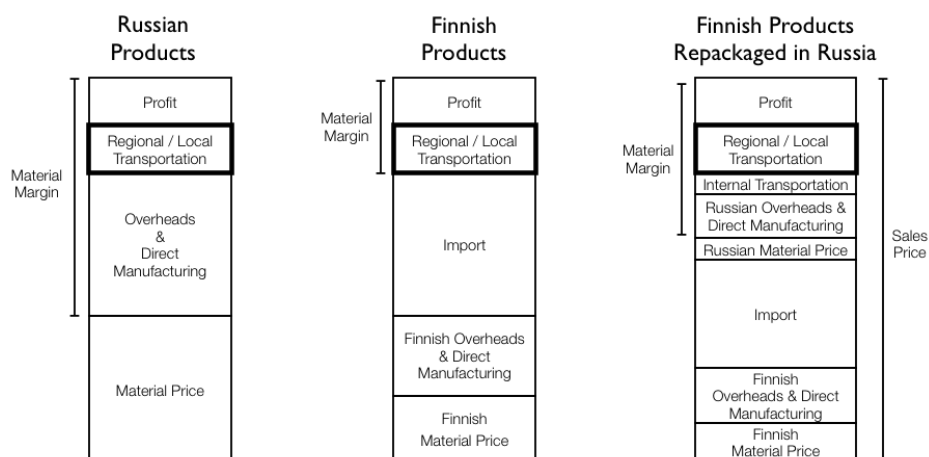
*Figure 71. General product sales price structure.*

However, in practice, products can be sold with different delivery terms. First, customers can pick up products independently from the warehouses of Kiilto-Klei, which indicates the ex-works (EXW) delivery conditions. In this case, the sales price is made up simply by adding profit to the previously described self-cost structures, just like in the general case (Figure 72). Material Margin includes different elements for different product types. Interestingly, the self-price of Finnish products now indicates their Material Price, while Material Price of Finnish products repackaged in Russia includes now the costs of Finnish side, import and Russian Material Price.



*Figure 72. Product sales price structures with EXW conditions.*

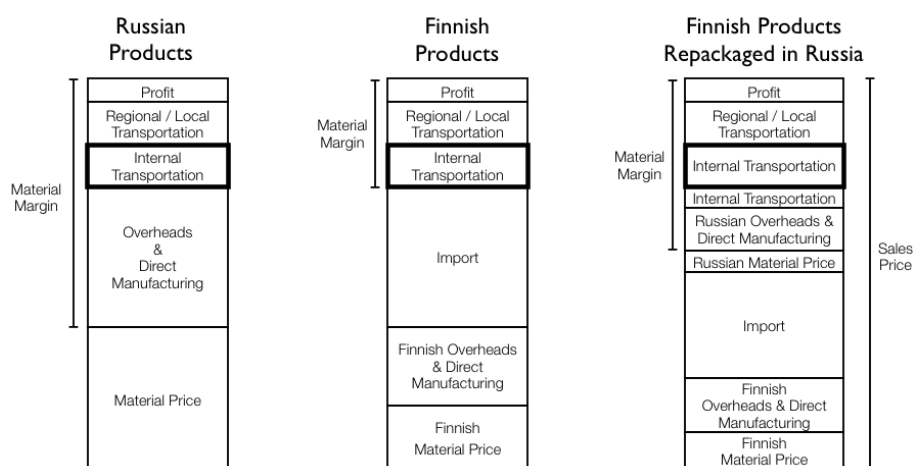
Second, delivery terms might imply that Kiilto-Klei organizes the delivery and thus pays for the transportation of products to the customer. In this case, regional or local deliveries might take place. Accordingly, for sales price structures it means that the additional costs of transportation either regional or local are included in the Material Margin (Figure 73).



*Figure 73. Product sales price structures with local or regional delivery paid by Kiilto-Klei.*

Third, delivery terms might also suggest that Kiilto-Klei organizes the delivery and initially pays for the transportation, though customers then return back some percentage of the transportation costs or even a complete sum. This delivery term is referred to as “special conditions”. However, there is no need to illustrate the product sales price structures, as they are similar to those previously explained.

Finally, referring to the “layer” of internal deliveries, products also happen to travel internally among the warehouses of Kiilto-Klei. Therefore, for some products that are transported internally, the sales price structure should include internal transportation costs. Correspondingly, Figure 74 demonstrates the case when products are first transported internally and then sold with regional or local delivery paid by Kiilto-Klei.



*Figure 74. Product sales price structures when products are transferred internally and then sold with local/regional delivery paid by Kiilto-Klei.*

Transportation costs that are in the scope of this study play a significant role when considering product cost structures or using them for product pricing. However, the basic idea particularly important for the study is that within the Material Margin, if

other components are left unchanged, there is a clear direct dependence between transportation costs and profit: the more Kiilto-Klei pays for transportation, the less is left for profit and vice versa (Figure 75).

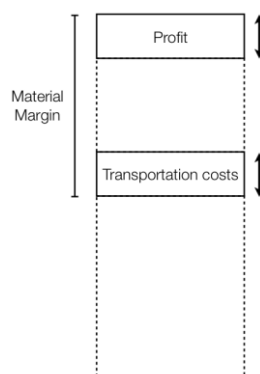


Figure 75. Dependence between transportation costs and profit.

In the end, the knowledge of real transportation costs is, therefore, vital in dealing with the profitability matters and for general understanding of the business performance. In the progress of this study, transportation costs of Kiilto-Klei as the type of distribution costs were aggregated in the subsidiary distribution cost database.

#### 4.3.2. Building subsidiary distribution cost database

Basic logic of building the cost database was already rather straightforwardly described in the Chapter 2 as the accumulation of cost data. However, in practice, the process performed in this study was much more complicated than bringing together the costs of transportation. In reality, the collected dataset was much richer and contained a large number of variables. The very process of building the distribution cost database of Kiilto-Klei implied a sophisticated combination of data from a variety of sources, both internal and external to the company (Figure 76).

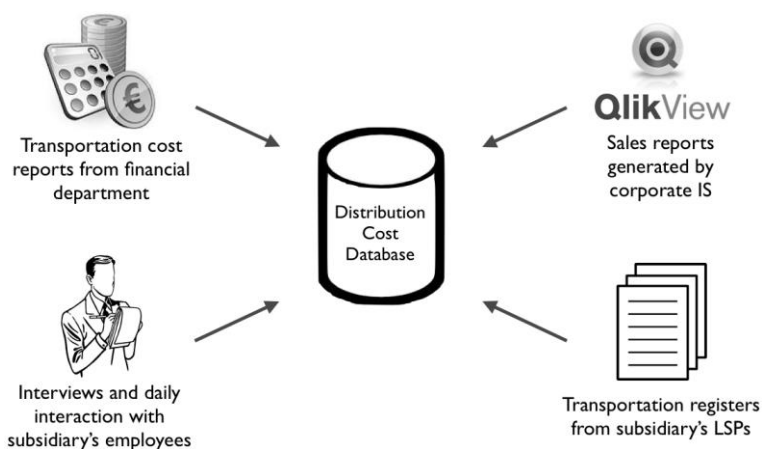
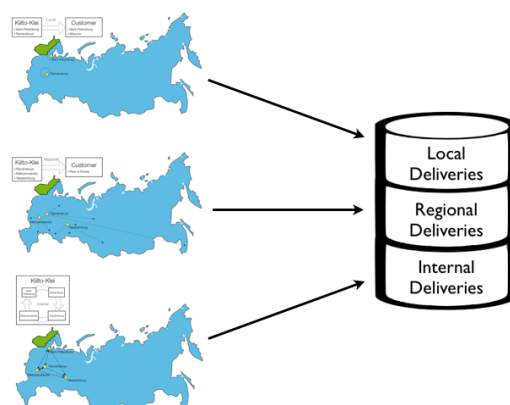


Figure 76. Sources of data for distribution cost database of Kiilto-Klei.

First, the actual cost data was retrieved from the transportation cost reports provided by the financial department (electronic extracts from the ledger in Microsoft Excel format). Second, raw cost data was enriched with the sales data from the corporate IS (extracts from the sales module of corporate IS in Microsoft Excel format) and also verified in such a way. Third, the data was gathered from transportation registers provided by the subsidiary's LSPs via e-mail (scanned paper versions as well as electronic Microsoft Excel sheets). Finally, the dataset was supplemented by the data obtained from the interviews and daily interactions with subsidiary's employees.

Importantly, the dataset of distribution cost database of Kiilto-Klei possessed not solely the quantitative transportation cost data, but also other related qualitative distribution data implementations. The time period for data collected to the distribution cost database of Kiilto-Klei in the scope of this study counted for nine month of 2012, from January to September respectively.

As a matter of fact, Kiilto-Klei's distribution cost database got compound of three main parts. Due to the needs of case company, the set of data included in subsidiary distribution cost database covered local, regional and internal "layers" of distribution, introduced previously (Figure 77).



*Figure 77. Constituents of Kiilto-Klei's distribution cost database.*

Nevertheless, international deliveries as the tying distributional link between the parent and subsidiary were out of the scope of subsidiary distribution cost database mainly because of peculiarities of transportation cost allocation principles discussed in the previous section. International deliveries and, thus, international transportation costs are applicable not to all the products that Kiilto-Klei handles. Moreover, import transportation costs are known and included in the Material Price of relevant products.

Eventually, these three constituents or levels of Kiilto-Klei's distribution cost database were formed by dissimilar arrangements of data. In practice, it meant that datasets of these three levels were organized with different structures. The exact structure of each of these levels deserves a detailed presentation.

### 4.3.3. Levels of subsidiary distribution cost database

In the beginning, the distribution cost database of Kiilto-Klei was completely made by the means of Microsoft Excel and with the use of spreadsheet tables. In general, columns of the tables represented the data items, while rows indicated the very deliveries. In spite of that, each level of Kiilto-Klei's distribution cost database contained a distinct set of data items and, consequently, own structure.

First, the level of local deliveries describes those deliveries when products leave from Saint-Petersburg's warehouse and reach customers in the local Saint-Petersburg's district and those when products leave Ramenskoye's warehouse and reach customers in the district of Moscow. The number of local deliveries is the most considerable compared to other delivery types. In order to build the local level of subsidiary distribution cost database, the dataset was sampled. Overall, data on almost 2000 deliveries was included in this level. Data items used when fulfilling the level of local deliveries within the distribution cost database of Kiilto-Klei are shown in Figure 78.

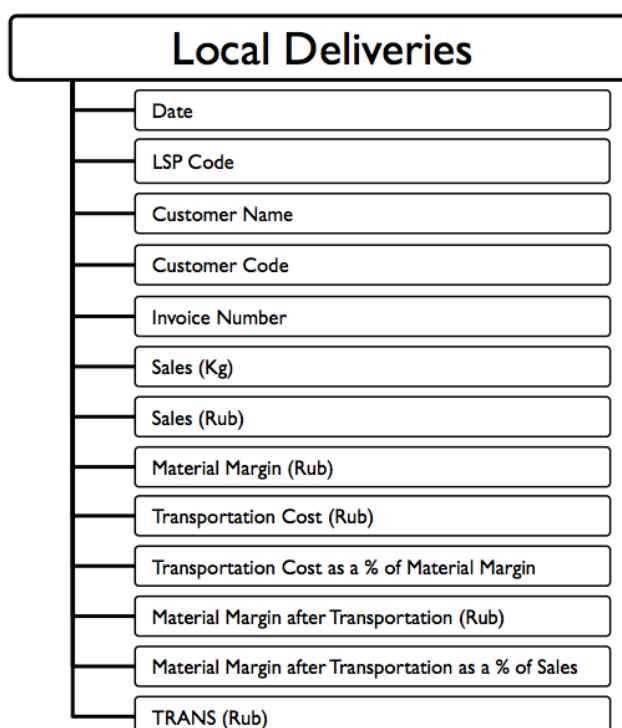
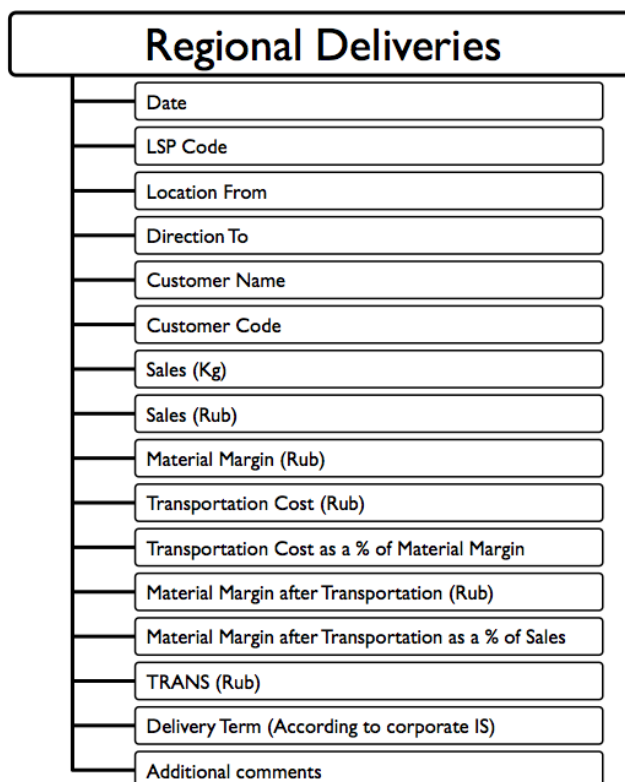


Figure 78. Data items of local deliveries level.

All these fields seem to be rather explicit, probably, except the latter one. The field “TRANS (Rub)” was used whenever customer ought to refund transportation costs due to the “special conditions” delivery term, so that the actual amount to be returned was indicated. This field intended to let examining the adequacy of such refunds.

Second, the level of regional deliveries covers those deliveries that occur from Ramenskoye, Maloyaroslavets, Yekaterinburg and directly reach the regional customers around the Russia. Similarly, the dataset was sampled and overall included data on more than 400 deliveries. The data items at this level included those listed in Figure 79.



*Figure 79. Data items of regional deliveries level.*

On contrary to the local deliveries, where destination areas are limited by the same city or district, regional deliveries happen along the truly vast geography. Therefore, knowing the actual direction of transportation was indeed valuable. Interestingly, deliveries to 45 different destination cities across the Russia were recognized.

Finally, the level of internal deliveries describes the internal transfers among the four warehouses of Kiilto-Klei in Saint-Petersburg, Ramenskoye, Maloyaroslavets and Yekaterinburg. In addition, internal level of subsidiary distribution cost database also includes the data on deliveries happening between the Saint-Petersburg's warehouse and product repackaging facility, known as the repackaging loop.

Interestingly, the dataset covered all the deliveries that occurred in the examined time period and was not anyhow sampled. Moreover, this level had two distinct perspectives towards internal transportation data: based around the product group and based around the delivery direction. Practically, the same object, internal deliveries, was presented from two points, according to the products transferred and the direction of transfer. Data items included in the level of internal deliveries are shown in Figure 80.

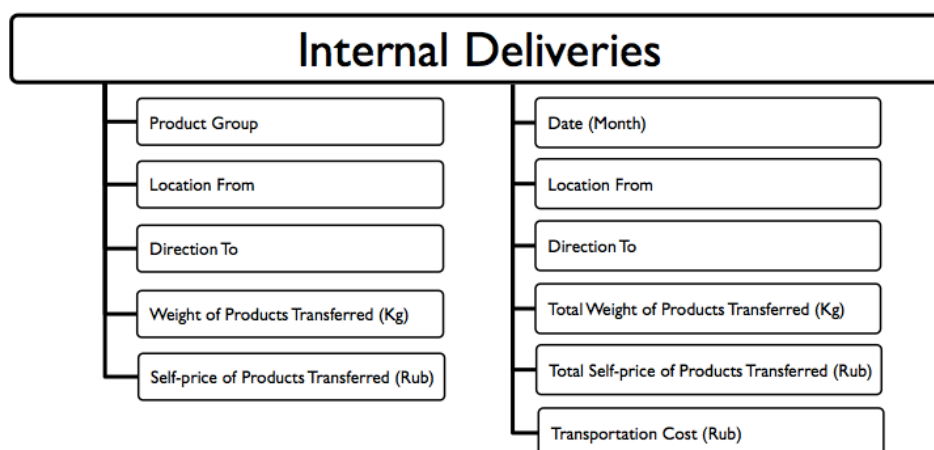


Figure 80. Data items of internal deliveries level.

As a matter of fact, five different product groups were used on this level of subsidiary distribution cost database. Moreover, even though the ‘LSP Code’ data item was not presented on the internal level of Kiilto-Klei’s distribution cost database, the data identifying the total use of certain LSP for internal deliveries could have been traced in the reports provided by the subsidiary’s financial department.

Eventually, the volume of data on distribution and transportation costs collected and combined in the Kiilto-Klei’s distribution cost database was indeed immense and provided a great basis for further analysis. In this vein, the use of Kiilto-Klei’s distribution cost database implied the creation of various reports.

#### 4.4. Using distribution cost database of Kiilto-Klei

This section utilizes the part of theoretical framework, which describes the use of subsidiary distribution cost database for creation of reports that provide valuable cost information (Figure 81).

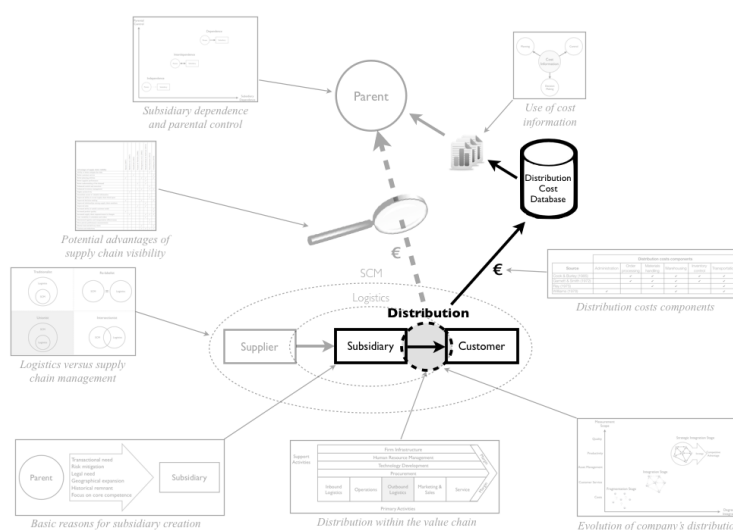


Figure 81. Elements of the theoretical framework referred in this section.

In course of this study, first, the data accumulated in the distribution cost database of Kiilto-Klei was analyzed and interpreted. Second, the analysis led to the formation of explicit and apprehensible reports with accordance to specific needs of Kiilto Oy. Finally and importantly, the results were communicated to the management.

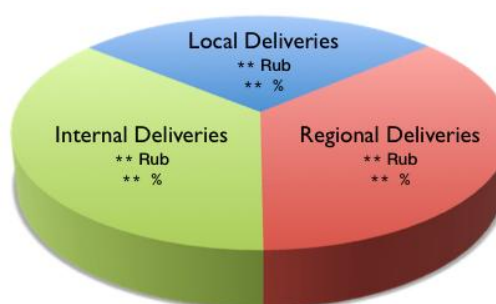
The character of data gathered into the subsidiary distribution cost database in case of Kiilto-Klei enabled the formation of various reports. As a matter of fact, if classified, these reports provided the following:

1. General level analysis of Kiilto-Klei's transportation costs
2. Customer level analysis of Kiilto-Klei's transportation costs
3. Product level analysis of Kiilto-Klei's transportation costs

Respectively, the following discussion is divided into three parts. First, the use of distribution cost database of Kiilto-Klei for the general analysis of Kiilto-Klei's transportation costs is referred. Second, its use for customer level analysis of Kiilto-Klei's transportation costs is presented. Finally, the use of subsidiary distribution cost database for product level analysis of Kiilto-Klei's transportation costs is described.

#### 4.4.1. General level analysis of Kiilto-Klei's transportation costs

Distribution cost database of Kiilto-Klei was used in order to form a general insight into the allocation of subsidiary's transportation costs. In that sense, for instance, the shares of transportation costs according to delivery type were identified (Figure 82).



*Figure 82. Shares of transportation costs by delivery type.*

Furthermore, based on the data from Kiilto-Klei's distribution cost database for each of the "layers" of distribution following average figures were calculated and included into the reports:

- Average actual transportation cost as a percentage of Material Margin
- Average actual transportation cost as a percentage of Sales
- Average actual cost of transportation (Rub/Kg)
- Average actual cost of transportation on certain direction (Rub/Kg)





Figure 85. Customer profile with transportation costs taken into account.

In such a way, traditional customer analysis was enriched with a new dimension of transportation costs. Importantly, traditional indicators of customer's profitability (Total Material Margin as % of the Total Sales) easily accessed through the corporate IS, were made more accurate by taking into account the actual transportation costs incurred (Total Material Margin after Transportation Costs as % of Total Sales).

#### 4.4.3. Product level analysis of Kiilto-Klei's transportation costs

The distribution cost database of Kiilto-Klei was also exploited in order to enrich the information on products with the transportation cost perspective. Accordingly, the information on actual transportation costs incurred was added when attempting to understand or evaluate the profitability of particular products or whole product groups. Referring to the discussion on Kiilto-Klei's product cost structures, subsidiary distribution cost database provided the information on actual transportation costs and, therefore, allowed more detailed product profitability assessment (Figure 86).

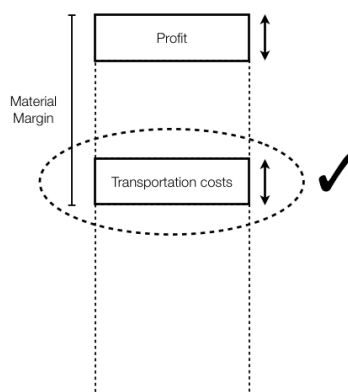


Figure 86. Knowing actual transportation costs in product cost structure.

For example, knowing the average Material Margin per kilogram (available from the corporate IS) of some particular product or even the whole product group, and possessing the figures on average cost of transportation of one kilogram at each delivery destination (available from the subsidiary distribution cost database), there was an opportunity to evaluate the role, played by the transportation costs within the Material Margin on average when a kilogram of some product is transported at certain direction or some product group is sold with certain delivery type (Figure 87).

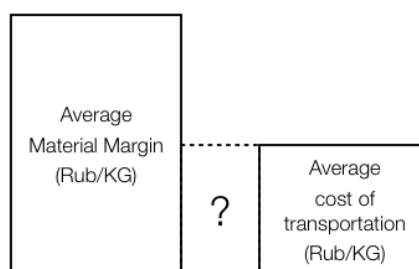


Figure 87. Understanding the role of transportation costs in product cost structure.

In such a way, the distribution cost database of Kiilto-Klei allowed tracing how the profitability of products or whole product groups is affected by transportation costs. Figure 88 shows the format of the report, aimed to demonstrate what happens on average with the cost structures of products within some particular product group if different scenarios of deliveries are applied.

## PRODUCT GROUP X

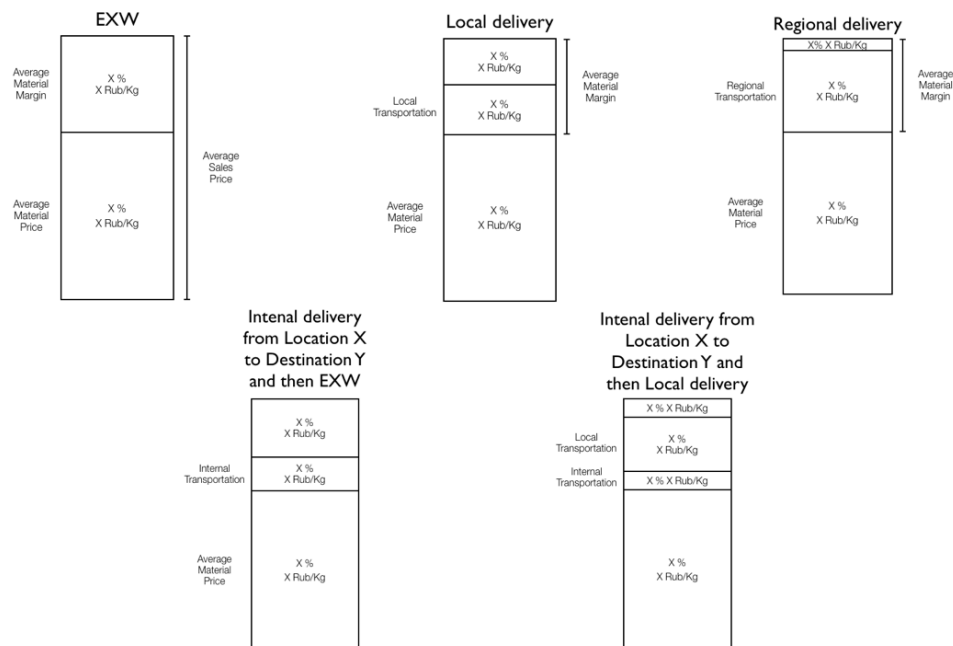


Figure 88. Report on product group delivery scenarios.

The latter type of report provided information on the whole product group, however, it was also important to investigate the level of particular products. As a matter of fact, Kiilto-Klei's distribution cost database, importantly, allowed tracing how the profitability of each particular product changes when Kiilto-Klei delivers it to various destinations. Such information was reported in a form shown in Figure 89.

Average cost of transportation as % of Average Material Margin, if sent from Location X to...								
	Destination 1	Destination 2	Destination 3	Destination 4	Destination 5	Destination 6	Destination 7	Destination 8
Product 1	X	X	X	X	X	X	X	X
Product 2	X	X	X	X	X	X	X	X
Product 3	X	X	X	X	X	X	X	X
Product 4	X	X	X	X	X	X	X	X
Product 5	X	X	X	X	X	X	X	X

Acceptable

Satisfactory

Critical

Figure 89. Report on delivery scenarios for each particular product.

Such type of report allowed revealing the unfavorable destinations for particular products or whole product groups as well as defining the maximum “profitable diameters” – distances, after which the profitability of products after transportation on average reaches certain critical points. The latter information was reported in a form demonstrated in Figure 90.

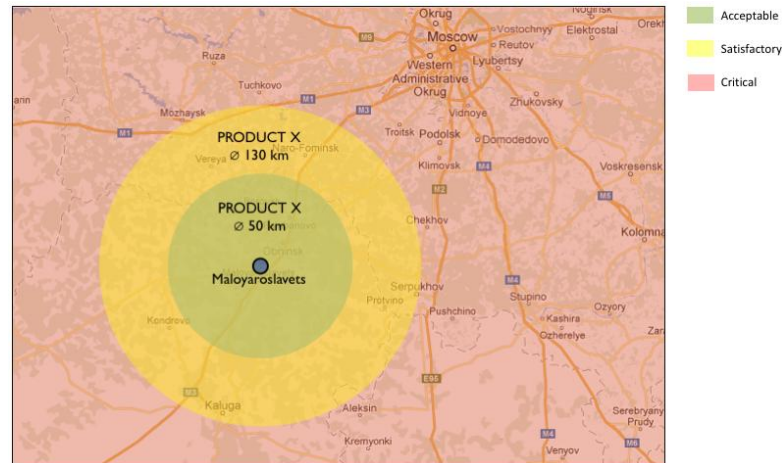


Figure 90. “Profitable diameters” type of report for particular product.

As a matter of fact, apart from the examples covered by the scope of this thesis, the distribution cost database of Kiilto-Klei could have been used for even more sophisticated analyses depending on the specific needs. Eventually, distribution cost database of Kiilto-Klei overall enabled an immense number of applications and added yet another dimension to traditional means of analysis of subsidiary’s profitability matters on general, customer and product levels.

#### 4.5. Reached cost visibility into distribution of Kiilto-Klei

This final section of the chapter utilizes the part of theoretical framework that actually suggests that the cost information provided by the use of subsidiary distribution cost database enables cost visibility into subsidiary distribution (Figure 91). Moreover, in the end, it summarizes the application of the theoretical framework to the case of Kiilto.

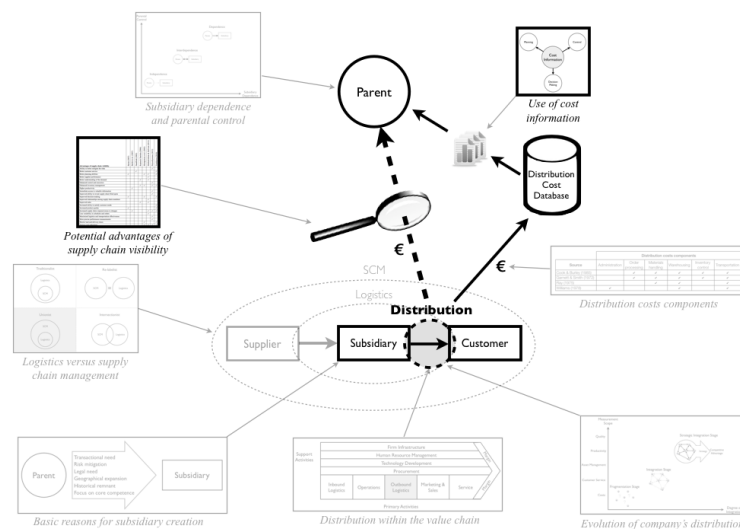
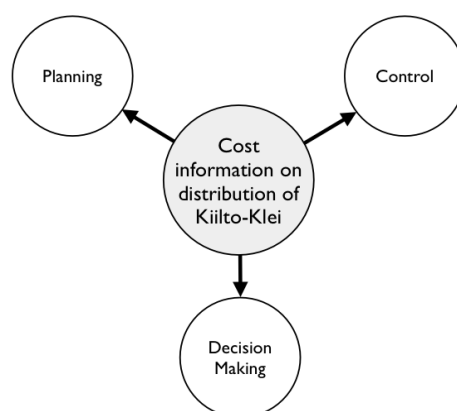


Figure 91. Elements of the theoretical framework referred in this section.

In the beginning, referring to the theoretical framework, cost information received in the result of transformation of cost data contained in the subsidiary distribution cost

database could be used in order to enhance certain managerial activities. Accordingly, the use of cost information on distribution of Kiilto-Klei suggests improvements in the execution of planning, control and decision-making (Figure 92).



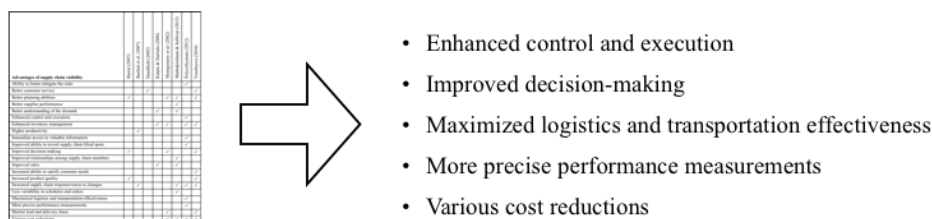
*Figure 92. Use of cost information: Case Kiilto.*

First, cost information on actual transportation costs of Kiilto-Klei can be used for planning purposes. For example, management might use the information provided by the study to plan essential actions that have to be taken in the field of subsidiary distribution in order to optimize its functioning. In addition, already existing plans regarding the subsidiary distribution can be adjusted due to the disclosures emerged with the use of subsidiary distribution cost database.

Second, provided cost information can be utilized for control. Indeed, possessing cost information on Kiilto-Klei's distribution and transportation costs in particular, Kiilto Oy is able to enrich its controlling functions, especially in terms of subsidiary distribution. For example, with the use of cost information provided by the subsidiary distribution cost database Kiilto Oy got ability to thoroughly monitor the distribution practices of Kiilto-Klei and thus ability of control.

Finally, cost information gained from the use of subsidiary distribution cost database can greatly facilitate the decision-making. In fact, the accuracy of decisions in the field of subsidiary distribution could be increased due to practically eliminated uncertainty. Indeed, decision-making in conditions when the actual figures on subsidiary distribution are apparent is believed to be more efficient.

Being a valuable source of cost information regarding the distribution of Kiilto-Klei, the subsidiary distribution cost database proves to be a tool enabling the cost visibility into distribution of Kiilto-Klei. Accordingly, such cost visibility as the type of SCV is believed to provide certain advantages. Applying the general theoretical considerations on potential advantages of SCV to the case of Kiilto-Klei, the advantages highlighted in Figure 93 were reached already in the course of this study or are potentially attainable with the use of subsidiary distribution cost database developed in this study.



*Figure 93. Advantages of cost visibility into Kiilto-Klei's distribution.*

First, the implementation of subsidiary distribution cost database and consequently enhanced visibility into subsidiary distribution costs, undoubtedly, allowed Kiilto Oy to increase its parental control over Kiilto-Klei. Supplied cost information and consequent cost visibility highly increased the awareness of Kiilto Oy over the distributional reality of its foreign subsidiary. Moreover, possible weaknesses in executing the distributional functions can be further spotted and improved.

Second, appearance of the meaningful source of cost information in the field of subsidiary distribution truly became a premise of improved decision-making. In addition to previously mentioned eliminated uncertainty, cost visibility into distribution of Kiilto-Klei enabled management of both parent and subsidiary organizations not only to make more accurate decisions, but also to evaluate and follow-up the adequacy of these decisions. For instance, actual transportation costs can now be compared to prices provided by different LSPs and better decisions be made.

Third, cost visibility into distribution of Kiilto-Klei is a great premise to potentially maximize transportation effectiveness. As the distribution network, transportation costs of Kiilto-Klei and related general, customer and product level cost implications are clearly spread before the eyes of management, it is now just the matter of rational decision-making to optimize the distributional processes so that transportation effectiveness is maximized.

Fourth, due to the reached cost visibility into distribution of Kiilto-Klei, Kiilto Oy received a valuable complement to the existing means of business performance measurement of its foreign subsidiary. Overall, any approximation of costing to the reality advantageously affects the ability to measure performance. For example, as already discussed, the accuracy of assessments in terms of subsidiary product or customer profitability increased with the addition of transportation costs perspective.

Finally, reached cost visibility into distribution of Kiilto-Klei may facilitate the reductions of various costs. However, this is not the cost visibility itself that let the costs be reduced, but the advantages previously discussed and their proper use. Rational decision-making, better execution, maximized effectiveness, enhanced control and performance measurement indeed could potentially lead to significant cost reductions.

In the end, similarly to what was done in the end of Chapter 2, Figure 94 brings together all the pieces of the theoretical framework, but in its application to the case of Kiilto as discussed throughout this chapter. This figure provides an important link to the theory and application purpose of the research.

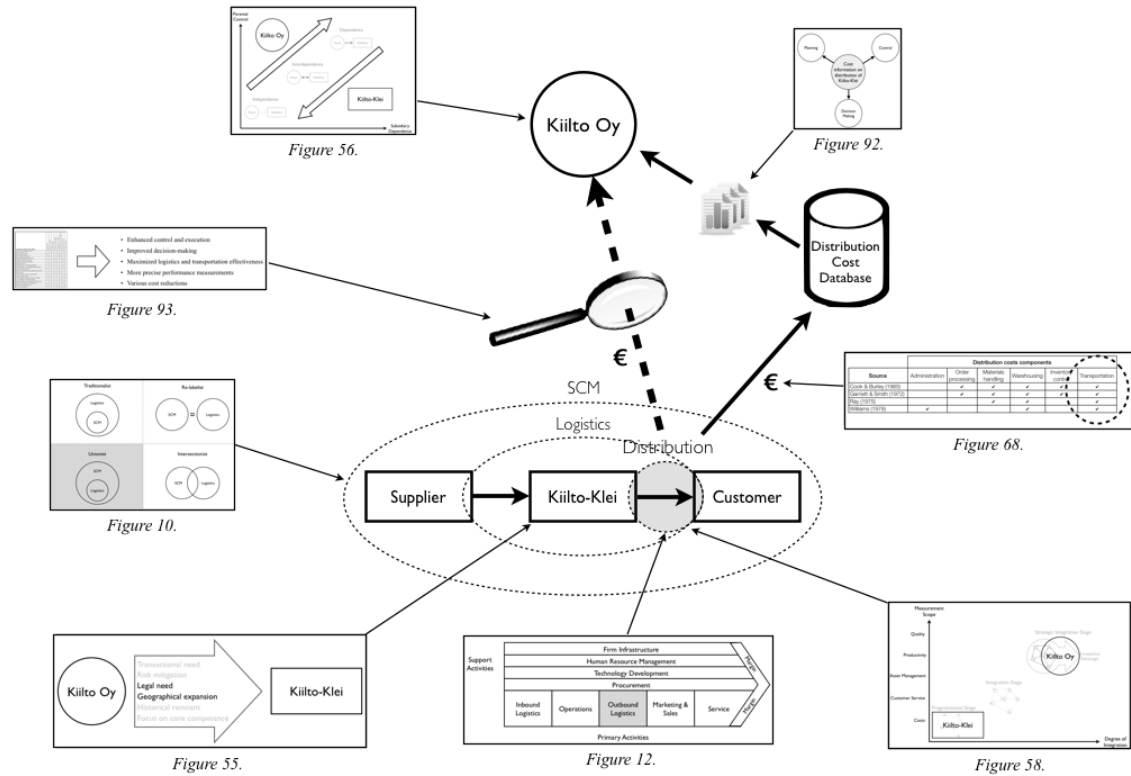


Figure 94. Final theoretical framework in application to the case of Kiilto.

This final application of the theoretical framework to the actual case company should be treated as the conceptual expression of empirical results of the thesis. However, this application still has to be related back to the literature to indicate what concepts and ideas found its empirical implementation. Eventually, such a recurrence to the literature is presented as a part of the next chapter.



## 5. DISCUSSION

This chapter provides the general examination of the study outcomes as well as links the empirical results back to the literature. The chapter consists of four parts and relates to the previous chapters of the thesis as shown in Figure 95.

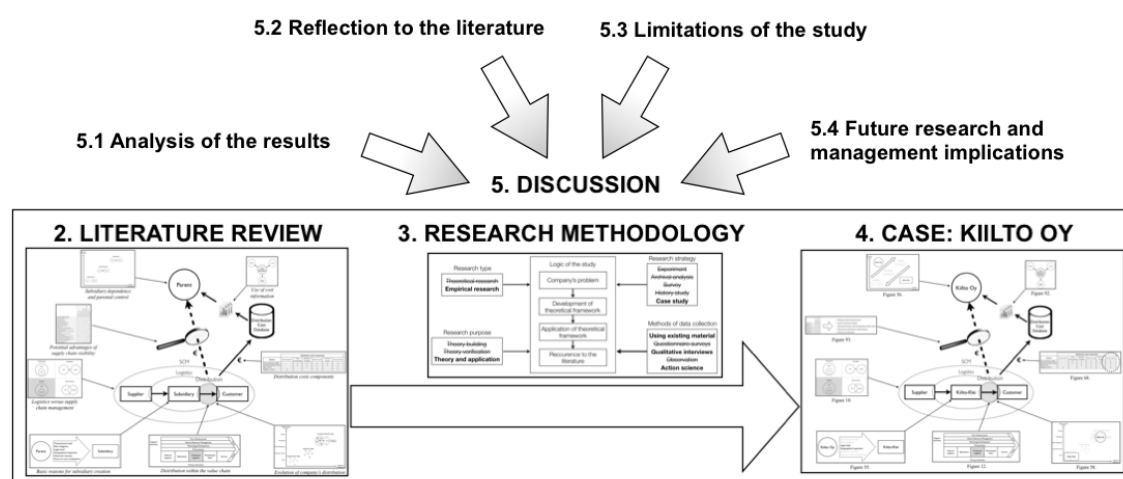


Figure 95. Logic of the Chapter 5.

First, the attainment of study objectives is discussed. Second, the empirical results are taken through the prism of reviewed literature. Third, the limitations of the study are presented. Finally, the ideas on future research are introduced as well as the managerial implications are stated.

### 5.1. Analysis of the results

In general, the project was conducted on assignment of the case company and aimed at development of a tool for parent organization that would enable enhanced cost visibility into distribution of its foreign subsidiary. Such comprehensive assignment was realized through the attainment of particular study objectives, specified as follows:

- (1) Provide a meaningful distribution cost reporting tool for the case company in order to thoroughly trace distribution costs of its foreign subsidiary
- (2) This tool has to be applicable for the further analysis of the impact of distribution costs on the business performance of the foreign subsidiary
- (3) This tool has to facilitate the ability of case company to control the operations of its foreign subsidiary and its distribution in particular.

First, the study resulted in the development of subsidiary distribution cost database containing extensive cost data on subsidiary distribution. The combination of subsidiary distribution cost database and its use, presented in this thesis, essentially serves as a powerful cost reporting mechanism enabling thorough traceability of subsidiary distribution costs. In that sense it is highly important not to separate the very subsidiary distribution cost database from its use and application, but consider them as a whole.

Second, the developed subsidiary distribution cost database along the project was vastly utilized for analytical purposes. In particular, it enabled detailed analysis of subsidiary distribution cost implications and their role in relation to the business performance of the subsidiary organization. Moreover, analysis was possible on general, product or customer levels, making the examination truly particularized.

Third, subsidiary distribution cost database and, importantly, its use for analysis provided meaningful cost information, which was delivered and communicated to the management of the case company, thus touching upon the controlling function. Indeed, the study managed to facilitate the ability of case company to control the operations of its foreign subsidiary by practically eliminating the preceding uncertainty of its distribution activities as well as providing valuable insights into impact of distribution on the general business performance of the subsidiary.

Ultimately, the creation and use of subsidiary distribution cost database led to the supply of meaningful cost information on distribution of the foreign subsidiary, consequently, enabling cost visibility into subsidiary distribution for the case company. This fact exactly indicates the accomplishment of the general project assignment.

## **5.2. Reflection to the literature**

The research purpose of this study, stated as theory and application, is realized by the formation of certain theoretical framework, which aids to address the actual problem by combining in a novel manner the ideas and concepts available in the reviewed literature, and its following application to the actual company case. However, such application might still be referred back to the literature by examining the concepts and ideas that happened to be used for the achievement of the empirical results of the thesis.

The study touched upon the distribution of Kiilto-Klei as a foreign subsidiary of Kiilto Oy. Distribution of Kiilto-Klei was regarded as activities required to bring the finished products from the end of production to the customers as fairly defined in an entirety of reviewed literature and specifically in Ray et al. (1979) and Crainic & Dejax (1993). Distribution or outbound logistics of Kiilto-Klei was differentiated from outbound or external logistics as also distinguished in Tilanus (1997) and Porter (1998).

Moreover, distribution of Kiilto-Klei, studied in the course of this thesis, was undeniably treated as the constituent of Kiilto-Klei's overall logistics operations, what reflects the correlation between logistics and distribution as discussed in the majority of sources and specifically in Tseng et al. (2005). At the same time, supply chain management of Kiilto-Klei covers, for instance, relationships with suppliers, meaning even more than logistics, thus empirically referring to the unionist approach among proposed in Halldorsson & Larson (2004). Other approaches within the same framework, therefore, were proved to be unsound in terms of the studied case.

The main reasons for creation of Kiilto-Klei as a foreign subsidiary were geographical expansion motives of Kiilto Oy as mentioned in Chartier (2009) and specific legal requirements as pointed in Ttara (1997). Other reasons identified from the reviewed literature were not relevant to the particular case, questioning their general applicability. Kiilto Oy, being a parent organization, tends to increase the control over its foreign subsidiary and make Kiilto-Klei more dependent, while at the same time, Kiilto-Klei leans towards independence and strives for loosening the parental control. The latter exactly reflects the extreme states of framework presented in Harzing (2000). The role of interdependence state within the same framework is though difficult to precisely assess with application to particular case of Kiilto.

The study showed that the evolution of Kiilto Oy's distribution by a right reached strategic integration, while this of Kiilto-Klei could still be characterized as fragmented and with pure focus on the cost measurement, what reflects extreme stages of company's distribution evolution proposed in Bowersox & Daugherty (1992). However, the intermediate stage of integration, presented in the same framework, was not relevant to the particular case, thus, in a way questioning the justifiability of its overall existence. Furthermore, the study concentrates specifically on the transportation as the cost component of Kiilto-Klei's distribution, which reflects the classifications mentioned in Cook & Burley (1985), Garnett & Smith (1972), Ray (1975) and Williams (1978).

Distribution cost database of Kiilto-Klei, built in this study as an organized collection of cost data, reflects the cost database concept discussed in Picklett & Elliott (2007) and Honsinger et al. (2010), however, developing it by presenting it from a novel perspective in a view of distribution and context of a multinational company. Practical use of Kiilto-Klei's distribution cost database in order to form reports containing valuable cost information reflects the general idea presented in Barrett (1982), however, deductively narrows the scope of its applicability to the context of distribution and subsidiary. Cost information on distribution of Kiilto-Klei as any other valuable cost information empowers the execution of the managerial activities exactly as stated in Barriere-Varju (2012).

Availability of cost information, provided by this study, reflects the cost visibility concept presented within the supply chain visibility classifications in Lamming et al. (2001) and Hultman & Axelsson (2006). However, cost visibility mentioned in the latter sources relates to the actors of the supply chain, but not to the units of the same company. For that reason, in this study the concept of cost visibility is developed through its consideration and application in the context of relationships within the units of one multinational company as well as focusing solely on visibility of distribution costs of the foreign subsidiary for the parent organization.

Resulting subsidiary distribution cost visibility as a type of supply chain visibility implied certain advantages in Kiilto's case reflecting those mentioned in Barratt & Oke (2007), Montgomery et al. (2002), PelycoSystems (2012) and Vorobyeva (2010). However, other potential advantages of supply chain visibility, identified along the literature review, were not apparent in the case of Kiilto, therefore, questioning their general relation to the reality. In the end, Figure 96 indicates the sources directly reflected by the empirical results of the study. In other words, the figure demonstrates exactly those sources, of which the ideas and concepts happened to be justified with the real case of this study.

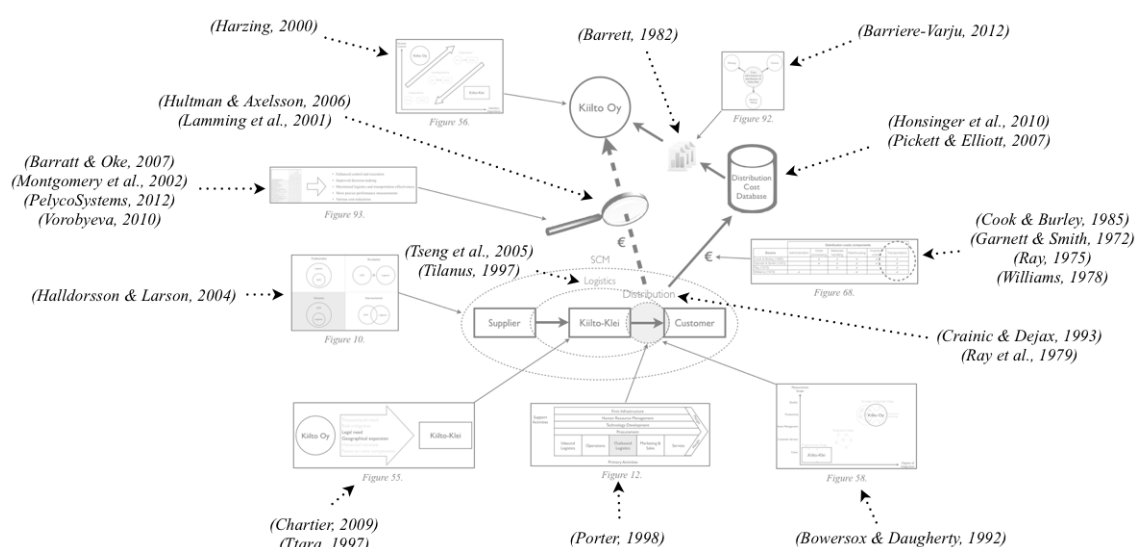


Figure 96. Sources directly reflected by the study.

Eventually, it is worth noting that the theoretical framework, formed in this thesis, was steadily guiding the processes of empirical study and in a way determined the course of actions taken and decisions required to obtain the final results. It truly served as a backdrop of the study and, in the end, still allowed investigating the relation of the empirical results to the reviewed literature.

### **5.3. Limitations of the study**

The study unavoidably possessed a number of limitations that are worth mentioning. First, due to the specificity of the assignment given by the case company the study very narrowly focused on the transportation costs within the distribution of subsidiary organization. Any other costs, thus, were not anyhow touched upon. However, even though the focus of the study was narrow, there was still enough material to investigate and work on. Had there been more costs involved, the study could have been dramatically more complex and long, especially with regards to data collection, as well as the accuracy of the results could have been more difficult to provide.

Second, the study was devoted to a single case company, thus potentially limiting the generalizability of the results and especially the reflection of results to the literature. In other words, the use of single case could have hindered the ability of providing a complete proof of theoretical considerations presented in the reviewed literature to the reality. However, the study was merely aiming at an execution of particular assignment and attainment of specific objectives related to the actual problem of the case company. Therefore, this fact might be used as the justification of the single case use.

Finally, one of the study limitations might route from the fact that both the researcher and representatives of the case company were using their secondary language. Indeed, linguistic limitations might have provided lack of communicational clarity. However, the communication between the researcher and representatives of the subsidiary organization was held in their primary language, which was important, as practically, the subsidiary organization was the subject of the study.

### **5.4. Future research and management implications**

The study indeed was much adapted to the needs of case company, what on one hand, in many senses strictly narrowed its scope and, on the other hand, left a significant potential for further research. Referring to one of the previously mentioned limitations, the study was devoted solely to tracing the transportation costs of the subsidiary. However, the impact of other costs, which are yet taken sort of for granted, might in fact be tremendous, bringing a great field for further investigation. Consequently, future studies are expected to focus on the ways to address the full set of actual costs involved in the subsidiary operations and their real impact on business performance.

Furthermore, the study provided a tool for tracing transportation costs of the subsidiary, however, the process yet implied a lot of manual operations, especially when filling the very cost data in the database. Thus, an obvious idea for future implementation of the study results could be the development of an automated system of collection and interpretation of subsidiary cost data. In that sense, this study could be treated as the development of a model or design for future semi or even fully automated solution.

With regards to the managerial implications of the study, several things were mentioned by the main recipients of the study results – management of Kiilto Oy. First, even though it was not stated directly as a potential project outcome, parent company was able to significantly increase the general understanding of daily business operations of its foreign subsidiary. Of course, it were the details on subsidiary's distribution that served as the main addition to the parent's knowledge.

Second, the study remarkably increased transparency of subsidiary's distribution and transportation costs as well as their impact on subsidiary's business performance. Interestingly, the simple fact that parent organization is now paying increased attention to the costs of its subsidiary already tightened the parental control. The study clearly delivered the message to the subsidiary and now the subsidiary organization is aware of parent's being concerned. In fact, increased control was stated as the main implication.

Third, an important managerial implication relates to a better ability of planning, forecasting and budgeting. Possessing now an ability of receiving exhaustive data on actual distribution and transportation costs the quality of forecasts and, thus, budgets should be improved in the future, bringing valuable benefits for both parent and subsidiary organizations.

Fourth, the study resulted in a discovery of important information on critical deliveries of products or even whole product groups as well as critical customers served. With the use of study results it is now possible to readjust the distribution strategy of the subsidiary organization and optimize the deliveries. In other words, it is more probable now that the "right" products or product groups will be sent to the "right" destinations when serving the "right" customers.

Finally, the results of the study and also its course helped the parent organization to come up with the ideas on how the management of subsidiary's distribution and even overall logistics could be handled differently and in a more efficient manner. Moreover, organizational responsibilities got clarified and could now be adjusted so that those who should not be involved in logistics processes could be eliminated from any related activities and those who should, on the contrary, could be included more effectively.

## 6. CONCLUSION

Constantly facing issues caused by geographical distances, cultural and linguistic differences, modern multinational companies are operating in complex and ever-changing business environments. It is increasingly difficult to efficiently manage and control company's dispersed assets and units. Foreign subsidiaries are business units within multinational companies that are operating under control of parent organizations. Subsidiaries possess distinct arrays of information that oftentimes happen to be out of the parent's reach. For that reason, visibility into subsidiary operations is becoming a prerequisite to efficient subsidiary management and control. As a matter of fact, cost visibility into subsidiary distribution is not an exception.

The study was conducted on assignment of the case company and overall objective of the project was to develop a tool for parent organization that would enable enhanced cost visibility into distribution of its foreign subsidiary. The objective was reached by the creation of specific subsidiary distribution cost database. The use of subsidiary distribution cost database provided meaningful cost information, and consequently, enabled cost visibility into subsidiary distribution.

In order to address the particular problem, based on the reviewed literature, the study developed certain conceptual framework, which then was applied to the actual company case. With regards to research methodology, this study utilized empirical type of the research with the purpose of theory and application. Moreover, case study research strategy was followed and such data generation methods as the use of existing materials, interviewing and action science were exploited.

In the result of this study, the case company received a valuable tool practically eliminating the uncertainty of subsidiary's distribution as well as providing traceability of subsidiary's transportation costs. Case company reinforced its parental control and enriched the ability to evaluate subsidiary's performance taking into account the actual transportation costs. The study overall provided the basis for cost-efficient adjustment of subsidiary's distribution strategy as well as for the development and optimization of related business processes.

## REFERENCES

- Ameguide, F. (2009). The development and evolution of the HQ-subsidary relationship in an emerging market MNC: The case of UTI Worldwide Inc. Gordon Institute of Business Science, University of Pretoria. 129 p. [Accessed on: 28.08.2012]. Available at: <http://upetd.up.ac.za/thesis/available/etd-04072010-133307/unrestricted/dissertation.pdf>
- Barratt, M., Oke, A. (2007). Antecedents of supply chain visibility in retail supply chains: A resource-based theory perspective. *Journal of Operations Management*, 25, pp. 1217-1233.
- Barrett, T. F. (1982). The modular data base system: An appraisal of its usefulness in physical distribution costing. *International Journal of Physical Distribution & Logistics Management*, 12 (3), pp. 92-103.
- Barriere-Varju, C. (2012). Cost analysis: Measurement and informed decisions. White Paper. BVWGlobal. New Ways of Thinking, Delivering Value! 3 p. [Accessed on: 30.09.2012]. Available at: [http://www.bvwglobal.com/consulting/downloads\\_consulting/BvW\\_White%20Paper\\_Cost%20Analysis.pdf](http://www.bvwglobal.com/consulting/downloads_consulting/BvW_White%20Paper_Cost%20Analysis.pdf)
- Bartlett, C. A., Ghoshal, S. (2002). Managing across borders: The transnational solution. Second edition. Harvard Business Review Press. 416 p.
- Bartlett, P. A., Julien, D. M., Baines, T. S. (2007). Improving supply chain performance through improved visibility. *The International Journal of Logistics Management*, 18 (2), pp. 294-313.
- Birkinshaw, J. (1997). Entrepreneurship in multinational corporations: The characteristics of subsidiary initiatives. *Strategic Management Journal*, 18 (3), pp. 207-229.
- Birkinshaw, J., Holm, U., Thilenius, P., Arvidsson, A. (2000). Consequences of perception gaps in the headquarters-subsidary relationship. *International Business Review*, 9, pp. 321-344.
- Birkinshaw, J., Hood, N. (1998). Building firm-specific advantages in multinational corporations: The role of subsidiary initiative. *Strategic Management Journal*, 19 (3), pp. 221-241.
- Birkinshaw, J., Pedersen, T. (2009). Strategy and management in MNE subsidiaries. *The Oxford Handbook of International Business*. Rugman, A. M. (editor). Second Edition. 880 p.
- Blocher, E., Stout, D., Cokins, G. (2009). Cost management: A strategic emphasis. Fifth edition. McGraw-Hill/Irwin. 992 p.
- Blomkvist, K. (2012). Knowledge management in MNCs – the importance of subsidiary transfer performance. *Journal of Knowledge Management*, 16 (6), pp. 904-918.



- Bowersox, D., Closs, D., Cooper, M. B. (2012). Supply chain logistics management. Fourth edition. McGraw-Hill/Irwin. 496 p.
- Bowersox, D., Daugherty, P. (1992). Logistics leadership – logistics organizations of the future. *Logistics Information Management*, 5 (1), pp. 12-17.
- Butner, K. (2010). The smarter supply chain of the future. *Strategy & Leadership*, 38 (1), pp. 22 – 31.
- Caputo, A. C., Fracocchi, L., Pelagagge, P. M. (2006). A genetic approach for freight transportation planning. *Industrial Management & Data Systems*, 106 (5), pp. 719-738.
- Caridi, M., Crippa, L., Perego, A., Sianesi, A., Tumino, A. (2010). Measuring visibility to improve supply chain performance: A quantitative approach. *Benchmarking: An International Journal*, 17 (4), pp. 593-615.
- Cavinato, J. L. (2000). Supply chain and transportation dictionary. Fourth edition. Kluwer Academic Publishers. 398 p.
- Chang, Y., Gong, Y., Peng, M. W. (2012). Expatriate knowledge transfer, subsidiary absorptive capacity, and subsidiary performance. *Academy of Management Journal*, 55 (4), pp. 927-948.
- Chartier, B. J. (2009). The case for subsidiary corporate governance. RBC Financial Group. 8 p. [Accessed on: 20.08.2012]. Available at: <http://cgs.computershare.com/news2/Subsidiary%20Governance%20Article%20V2.pdf>
- Cho, J. J., Ozment, J., Sink, H. (2008). Logistics capability, logistics outsourcing and firm performance in an e-commerce market. *International Journal of Physical Distribution & Logistics Management*, 38 (5), pp. 336-359.
- Closs, D. J., Goldsby, T. J., Clinton, S. R. (1997). Information technology influences on world class logistics capability. *International Journal of Physical Distribution & Logistics Management*, 27 (1), pp. 4-17.
- Cook, R. L., Burley, J. R. (1985). A framework for evaluating international physical distribution strategies. *International Journal of Physical Distribution & Logistics Management*, 15 (4), pp. 26-38.
- Coughlan, P., Coughlan, D. (2002). Action research for operations management. *International Journal of Operations & Production Management*, 22 (2), pp. 220-240.
- Council of Logistics Management. (2010). Supply chain management terms and glossary. [Accessed on: 20.09.2012]. Available at: <http://cscmp.org/digital/glossary/glossary.asp>
- Crainic, T. G., Dejax, P. J. (1993). Freight distribution and transport systems planning. *Logistics Information Management*, 3 (4), pp. 9-18.
- Cullen, J. B., Parboteeah, K. P. (2008). Multinational management: A strategic approach. Thomson/South-Western Publishing. 816 p.
- Currall, S. C., Towler, A. J. (2002). Research methods in management and organizational research: Toward integration of qualitative and quantitative

- techniques. Handbook of mixed methods in social & behavioral research. Tashakkori, A. (editor), Teddlie, C. (editor). SAGE Publications. 784 p.
- Davis, H. W., Drumm, W. (1996). Logistics costs and customer service levels. Council of Logistics Management Annual Conference Proceedings, pp. 149-159.
- Delios, A., Beamish, P. W. (2001). Survival and profitability: The roles of experience and intangible assets in foreign subsidiary performance. *Academy of Management Journal*, 44. pp. 1028-1038.
- Dura, C., Dobre-Baron, O. (2011). Analysis of foreign direct investments engaged by Japanese multinational companies. *Annals of the University of Petrosani, Economics*, 11 (2), pp. 81-92. [Accessed on: 21.10.2012]. Available at: <http://upet.ro/annals/economics/pdf/2011/part2/Dura-Dobre-Baron.pdf>
- Edmondson, A. C., McManus, S. E. (2007). Methodological fit in management field research. *Academy of Management Review*, 32 (4), pp. 1155-1179.
- Eisenhardt, K. (1989). Building theories from case study research. *The Academy of Management Review*, 14 (4), pp. 532-550.
- Esculier, G. G. (1997). Using improper costing methods may lead to losses. *The TQM Magazine*, 9 (3), pp. 228-230.
- Estrada, E. J., Davis, T. M., Dickerson, C. L. (2011). Parent-subsidiary relationships: Potential liabilities and best practices. ABA Business Law Section Spring Meeting, Business Bankruptcy Committee, Boston. 40 p. [Accessed on: 09.10.2012]. Available at: <http://www2.americanbar.org/calendar/business-law-section-2011-spring-meeting/Meeting%20Materials/1513.pdf>
- Everaert, P., Bruggeman, W., Sarens, G., Anderson, S. R., Levant, Y. (2008). Cost modeling in logistics using time-driven ABC: Experiences from a wholesaler. *International Journal of Physical Distribution & Logistics Management*, 38 (3), pp. 172-191.
- Explore Consulting. (2010). Managing the multi-company corporation. Netsuite One World. A White Paper for Today's Growing Businesses. 12 p. [Accessed on: 17.08.2012]. Available at: [http://www.exploreconsulting.com/docs/ec11\\_NS\\_OneWorld.pdf](http://www.exploreconsulting.com/docs/ec11_NS_OneWorld.pdf)
- Feagin, J. R. (1991). A case for the case study. The University of North Carolina Press. 300 p.
- Flynn, B. B., Kakibara, S. S., Schroeder, R. G., Bates, K. A., Flynn, E. J. (1990). Empirical research methods in operations management. *Journal of Operations Management*, 9 (2), pp. 250-284.
- Foss, N.J., Pedersen, T. (2002). Transferring knowledge in MNCs: The role of sources of subsidiary knowledge and organizational context. *Journal of International Management*, 8, pp. 49-67.
- Frederick, J. H. (1958). Costing practices in physical distribution. *Distribution Age*, January, pp. 53-96.

- Garnett, H. C., Smith, P. S. (1972). Total distribution Cost Simulation Model. *International Journal of Physical Distribution & Logistics Management*, 3 (5), pp. 355-364.
- Garnier, G. H. (1982). Context and decision making autonomy in the affiliates of U.S. Multinational corporations. *Academy of Management Journal*, 22 (4), pp. 893-908.
- Gilmore, D. (2002). Achieving transportation excellence. *World Trade*, 15 (11), pp. 36-38.
- Golafshani, N. (2003). Understanding reliability and validity in qualitative research. *The Qualitative Report*, 8 (4), pp. 597-607.
- Gordon, J. P. (2005). How to set up a subsidiary in the USA. USA Corporate Services Inc. 3 p. [Accessed on: 22.08.2012]. Available at: <http://www.usa-corporate.com/articles/05172005-1.pdf>
- Gummesson, E. (1993). Case study research in management: Method for generating qualitative data. Stockholm University, Department of Business Administration. 61 p.
- Halldorsson, A., Larson, P. (2004). Logistics versus supply chain management: An international survey. *International Journal of Logistics*, 7 (1), pp. 17-31.
- Handfield, R. B., Nichols, E. L. (2002). Supply chain redesign: Transforming supply chains into integrated value system. United States of America, Prentice Hall. 408 p.
- Harvey, B., Wolfe, B. (2008). Visibility in the supply chain. *Logistics Magazine*, 11 (5). 5 p. [Accessed on: 10.10.2012]. Available at: [http://www.elemica.com/pdf/Logistics\\_Magazine\\_Supply\\_Chain\\_Visibility\\_by\\_Bill\\_Harvey\\_Bill\\_Wolfe.pdf](http://www.elemica.com/pdf/Logistics_Magazine_Supply_Chain_Visibility_by_Bill_Harvey_Bill_Wolfe.pdf)
- Harzing, A. (2000). An empirical test and extension of the Bartlett and Ghoshal typology of multinational companies. *Journal of International Business Studies*, 31 (1), pp. 101-120.
- Harzing, A., Feely, A. (2008). The language barrier and its implications for HQ-subsidary relationships. *Cross Cultural Management: An International Journal*, 15 (1), pp. 49-60.
- Harzing, A., Noorderhaven, N. (2006). Geographical distance and the role and management of subsidiaries: The case of subsidiaries down-under. *Asia-Pacific Journal of Management*, 23 (2), pp. 167-185.
- Heaney, B. (2011). Supply chain visibility excellence: Fostering security, resiliency, and efficiency. 27 p. [Accessed on: 25.10.2012]. Available at: <http://blogs.infor.com/files/0278-6834-ra-scvisibility-bh-14-license-3.pdf>
- Hollier, B. (1993). The world logistics scene: Logistics takes the broader view. *Logistics Information Management*, 1, pp. 13-21.
- Holmstrom L. W. (1988). Electronic and media delivery of information: Matching new techniques to products and markets. *Reference Services Review*, 16 (3), pp. 7-19.

- Homburg, C., Fürst, A., Kuehnl, C. (2011). Ensuring international competitiveness: A configurative approach to foreign marketing subsidiaries. *Journal of the Academy of Marketing Science*, 40, pp. 290-312.
- Honsinger, R. R., Martin, J. B., Wallace, B. W., Wasley, S. N. (2010). Developing a long-term historical cost database. *Proceedings of AACE International Transactions*, 1. 7 p.
- House, R. G., Jackson, G. C. (1995). Trends in computer applications in transportation and distribution management. *International Journal of Physical Distribution & Logistics Management*, 25 (4), pp. 22-34.
- Hultman, J., Axelsson, B. (2006). Towards a typology of transparency for marketing management research. *Journal of Industrial Marketing Management*, 36, pp. 627-635.
- Huq, F., Stafford, T. F., Bhutta M., Kanungo, S. (2010). An examination of the differential effects of transportation in supply chain optimization modeling. *Journal of Manufacturing Technology Management*, 21 (2), pp. 269-286.
- Hussein, A. (2009). The use of triangulation in social sciences research: Can qualitative and quantitative methods be combined? *Journal of Comparative Social Work*, 1, pp. 1-12.
- IFAC. (2009). Evaluating and improving costing in organizations. International good practice guidance. Professional Accountants in Business Committee. 42 p. [Accessed on: 10.09.2012]. Available at: [http://www.fasab.gov/pdf/files/ifac\\_eval\\_and\\_improv\\_costing.pdf](http://www.fasab.gov/pdf/files/ifac_eval_and_improv_costing.pdf)
- International Accounting Standard 27. (2009). Consolidated and separate financial statements. EC staff consolidated version as of 16 September. 8 p. [Accessed on: 22.08.2012]. Available at: [http://ec.europa.eu/internal\\_market/accounting/docs/consolidated/ias27\\_en.pdf](http://ec.europa.eu/internal_market/accounting/docs/consolidated/ias27_en.pdf)
- InvestorWords. (2012). Historical data: Definition. 1 p. [Accessed on: 18.09.2012]. Available at: [http://www.investorwords.com/2317/historical\\_data.html](http://www.investorwords.com/2317/historical_data.html)
- Johnson, J. C., Wood, D. F. (1999). Contemporary logistics. Seventh edition. The University of Michigan. Prentice-Hall. 586 p.
- Kaipia, R., Hartiala, H. (2006). How to benefit from visibility in supply chains. *International Journal of Agile Manufacturing*, 9 (1), pp. 9-18.
- Kamal, S. (2011). Entry mode and subsidiary performance in emerging economies. *Mustang Journal of Business and Ethics*, 2, pp. 20-29.
- Karami, A., Rowley, J., Analoui, F. (2006). Research and knowledge building in management studies: An analysis of methodological preferences. *International Journal of Management*, 23 (1). pp. 43-52.
- Kogut, B., Zander, U. (1993). Knowledge of the firm and the evolutionary theory of the multinational corporation. *Journal of International Business Studies*, 24, pp. 625-645.
- Kopczak, L. R., Lee, H., Whang, S. (2000). Note on logistics in the information age. Graduate School of Business Stanford University. 19 p. [Accessed on:

- 04.10.2012]. Available at: <http://www2.isye.gatech.edu/~jbanks/coursefiles/SCM%20Course/1-OLS-Logisitcs-IT.pdf>
- Kumar, S. (2009). Business value of information sharing and the role of emerging technologies. University of Michigan. 164 p. [Accessed on: 24.09.2012]. Available at: [http://deepblue.lib.umich.edu/bitstream/2027.42/63644/1/sankum\\_1.pdf](http://deepblue.lib.umich.edu/bitstream/2027.42/63644/1/sankum_1.pdf)
- Lalonde, B. J., Pohlen, T. L. (1997). Issues in supply chain costing. The international Journal of Logistics Management, 7 (1), pp. 1-12.
- Lambert, D. M., Stock, J. R. (2000). Strategic logistics management. Fourth edition. McGraw-Hill/Irwin. 896 p.
- Lamming, R. C. (1993). Beyond partnership: Strategies for innovation and lean supply. London: Prentice Hall. 299 p.
- Lamming, R. C., Caldwell, N. D., Harrison, D. A., Phillips, W. (2001). Transparency in supply relationships: Concept and practice. Journal of Supply Chain Management, 37 (4), pp. 4-10.
- Lehaney, B. A., Vinten, G. (1994). "Methodology": An analysis of its meaning and use. Work Study, 43 (3), pp. 5-8.
- Leonard-Barton, D. (1990). A dual methodology for case studies: Synergistic use of a longitudinal single site with replicated multiple sites. Organization Science, 1 (1), pp. 248-266.
- Lewis, R. J. (1999). Reliability and validity: Meaning and measurement. 17 p. [Accessed on: 07.10.2012]. Available at: <http://www.umdj.edu/idsweb/idst6121/ReliabilityandValidity.pdf>
- Lummus, R. R., Krumwiede, D. W., Vokurka, R. J. (2001). The relationship of logistics to supply chain management: Developing a common industry definition. Industrial Management & Data Systems, 101 (8), pp. 426-432.
- Luo, Y. (2005). Toward coopetition within a multinational enterprise: A perspective from foreign subsidiaries. Journal of World Business, 40 (1), pp. 71-90.
- Lyly-Yrjänäinen, J., Velasquez, S., Suomala, P. Uusitalo, O. (2010). Introduction to industrial management. Know your numbers! Tampere University of Technology. Department of Industrial Management. 382 p.
- Mahlendorf, M. D., Rehring, J., Schäffer, U., Wyszomirski, E. (2012). Influencing foreign subsidiary decisions through headquarter performance measurement systems. Management Decision, 50 (4), pp. 688-717.
- Martinez, J. I., Jarillo J. C. (1989). The evolution of research on coordination mechanisms in multinational corporations. Journal of International Business Studies, 20 (3), pp. 489-514.
- Massingham, P., Massingham, R., Diment, K. (2012). Q methodology: Is it useful for accounting research? Qualitative Research in Accounting & Management, 9 (1), pp. 66-88.
- McGinnis, M. A. (1992). Military logistics: Insights for business logistics. International Journal of Physical Distribution & Logistics Management, 22 (2), pp. 22-32.

- Miller, M. J. (2003). Reliability and validity. Western International University. Graduate Research Methods. 3 p. [Accessed on: 11.10.2012]. Available at: [http://michaeljmillerphd.com/res500\\_lecturenotes/reliability\\_and\\_validity.pdf](http://michaeljmillerphd.com/res500_lecturenotes/reliability_and_validity.pdf)
- Minor, E. D., Hensley, R. L., Wood, D. R. (1994). A review of empirical manufacturing strategy studies. *International Journal of Operations and Production Management*, 14 (1), pp. 5-25.
- Moin, N. H., Salhi, S. (2007). Inventory routing problems: A logistical overview. *The Journal of the Operational Research Society*, 58 (9), pp. 1185-1194.
- Montgomery, A., Holcomb, M. C., Manrodt, K. B. (2002). Visibility: The quest for an adaptive supply chain. Report on trends and issues in logistics and transportation. 25 p. [Accessed on: 25.10.2012]. Available at: <http://coba.georgiasouthern.edu/centers/lit/report2002.pdf>
- Muringaseril, S. (2007). Control concepts in multinational corporations: The case of Swiss MNCs with foreign subsidiaries in India. Doctoral dissertation. University of St. Gallen. Graduate School of Business Administration. 127 p. [Accessed on: 24.08.2012]. Available at: [http://www1.unisg.ch/www/edis.nsf/SysLkpByIdentifier/3398/\\$FILE/dis3398.pdf](http://www1.unisg.ch/www/edis.nsf/SysLkpByIdentifier/3398/$FILE/dis3398.pdf)
- Muthukrsihnan, R., Sullivan, K. (2012). Next-generation supply management. Cisco Internet Business Solution Group (IBSG). 13 p. [Accessed on: 25.10.2012]. Available at: <http://www.cisco.com/web/about/ac79/docs/mfg/NextGenSCM.pdf>
- OCC. (2004). Related organizations: Corporate governance. Comptroller's Handbook. M-RO. 107 p. [Accessed on: 20.08.2012]. Available at: <http://www.occ.gov/publications/publications-by-type/comptrollers-handbook/pdf/relatedorg.pdf>
- PelycoSystems. (2012). Results are all that matter: Benefits of supply chain visibility. 1 p. [Accessed on: 29.09.2012]. Available at: <http://www.pelyco.com/value/>
- Perego, A., Perotti, S., Mangiaracina, R. (2011). ICT for logistics and freight transportation: A literature review and research agenda. *International Journal of Physical Distribution & Logistics Management*, 41 (5), pp. 457-483.
- Pickett, T. W., Elliott, B. G. (2007). Transforming historical project data into useful information. *Proceedings of AACE International Transactions*, 1. 6 p.
- Pirttilä, T., Hautaniemi, P. (1995). Activity-based costing and distribution logistics management. *International Journal of Production Economics*, 41, pp. 327-333.
- Piscitello, L., Rabbiosi, L. (2006). How does knowledge transfer from foreign subsidiaries affect parent companies' innovative capacity? Danish Research Unit for Industrial Dynamics. Working paper No. 06-22. 31 p. [Accessed on: 27.08.2012]. Available at: <http://www3.druid.dk/wp/20060022.pdf>
- Porter, M. E. (1998). Competitive advantage: Creating and sustaining superior performance. Simon and Schuster. 592 p.
- PwC. (2011). Understanding transactions with non-controlling interests. Back to basic series. 5 p. [Accessed on: 20.08.2012]. Available at: <http://www.pwc.com.au/>

[assurance/ifrs/assets/back-to-basics/Back-to-Basics-Transactions-non-controlling-interest-Nov11.pdf](#)

- Ray, D. (1975). Distribution costing: The current state of the art. *International Journal of Physical Distribution & Logistics Management*, 6 (2), pp. 73–107.
- Ray, D., Gattorna, J., Allen, M. (1979). Handbook on distribution costing and control. *International Journal of Physical Distribution & Logistics Management*, 10 (5), pp. 209-429.
- Reilly, M., Scott, P., Mangematin, V. (2012). Alignment or independence? Multinational subsidiaries and parent relations. *Journal of Business Strategy*, 33 (2), pp. 4-11.
- Rider, G. W., Ostrom, L. L. (1993). Logistics: A new era of competition. *International Journal of Physical Distribution & Logistics Management*, 2 (1), pp. 43-45.
- Rouse, M. (2006). Definition: Database. 1 p. [Accessed on: 01.10.2012]. Available at: <http://searchsqlserver.techtarget.com/definition/database#content>
- Rubin, J. W. (2006). When parent and subsidiary are public: Overlapping responsibilities require coordination. *Corporate Governance*. New York Law Journal, November 20. 3 p. [Accessed on: 09.10.2012]. Available at: <http://www.hoganlovells.com/files/Publication/780fdf4d-bddf-4dd4-8cf0-ce8578bf04eb/Presentation/PublicationAttachment/044c3f9c-12dd-4715-a754-d363d019dd2e/NYLJ%20article.pdf>
- Shah, J. (2009). Supply chain management: Text and cases. Pearson Education India. 472 p.
- Shapiro, J. F. (1993). Integrated logistics management, total cost analysis and optimization modeling. *International Journal of Physical Distribution & Logistics Management*, 22 (3), pp. 33-36.
- Shuttleworth, M. (2008). Definition of research. Experiment resources. 1 p. [Accessed on: 28.08.2012]. Available at: <http://www.experiment-resources.com/definition-of-research.html>
- Soni, G., Kodali, R. (2012). A critical review of empirical research methodology in supply chain management. *Journal of Manufacturing Technology Management*, 23 (6), pp. 753-779.
- Stainer, A. (1997). Logistics - a productivity and performance perspective. *Supply Chain Management: An International Journal*, 2 (2), pp. 53-62.
- Stern, L. W., El-Ansary, A. I., Coughlan, A. T. (1996). *Marketing Channels*. Fifth sub edition. Prentice Hall College Div. 576 p.
- Stevenson, W. J. (2008). *Operations management*. Tenth edition. New York, McGraw-Hill. 909 p.
- Swaminathan, J. M., Tayur, S. R. (2003). Models for supply chains in e-business. *Management Science*, 49 (10), pp. 1387-1406.
- Tilanus, B. (1997). *Information systems in logistics and transportation*. Second edition. Emerald Group Publishing Limited. 350 p.

- Tohamy, N., Orlov, L. M., Herbert, L. (2003). Supply chain visibility defined. Research report from 24 of April. Forrester research, Cambridge, MA. 5 p.
- Tseng, Y., Yue W. L., Taylor, M. (2005). The role of transportation in logistics chain. Proceedings of the Eastern Asia Society for Transportation Studies, 5, pp. 1657-1672.
- Ttara. (1997). The Texas franchise tax and location of payor: Untangling the issues. Ttara Research Foundation. 25 p. [Accessed on: 20.08.2012]. Available at: [http://www.ttara.org/files/document/TexFranchiseTax\\_Pubs\\_04-12-97.pdf](http://www.ttara.org/files/document/TexFranchiseTax_Pubs_04-12-97.pdf)
- Vaughan, L. Q. (1997). The role of information in business operations and success: A study based on Ontario medium-sized business. Graduate School of Library and Information Science. University of Western Ontario. CAIS / ACSI 97, pp. 113-123.
- Ventana Research. (2010). Accurate costing is key to profitability: Dynamic environments expose weaknesses in traditional approaches. White Paper. 8 p. [Accessed on: 30.09.2012]. Available at: [http://www.cfoinnovation.com/system/files/Accurate\\_Costing\\_Key\\_to\\_Profitability\\_VENTANA.pdf](http://www.cfoinnovation.com/system/files/Accurate_Costing_Key_to_Profitability_VENTANA.pdf)
- Vlasek, D. R. (2010). What is a “controlled group?” Why is the determination of a controlled group important for retirement plans? McDonald Hopkins LLC. 2 p. [Accessed on: 09.10.2012]. Available at: <http://www.trinitypension.com/pdf/What%20is%20a%20Controlled%20Grou.pdf>
- Vorobyeva, E. (2010). Horizontal visibility in delivery network: Nokian Tyres in Finland, Ukraine, and Russia. Select graduate papers. Tampere University of Technology, Faculty of Business and Technology Management. 17 p.
- Voss, C., Tsikriktsis, N., Frohlich, M. (2002). Case research in operations management. International Journal of Operations & Production Manoragement, 22 (2), pp. 195-219.
- Vozobulová, M. (2010). Changing customer relationships: Increasing inter-firm collaboration and information visibility in dealer networks. Select graduate papers. Tampere University of Technology, Faculty of Business and Technology Management. 20 p.
- W3C. (2001). World Wide Web Consortium process document. 46 p. [Accessed on: 20.08.2012]. Available at: <http://www.w3.org/Consortium/Process-20010719/process.pdf>
- Weijun, T. (2008). Research methods for business students. Shanghai Jiao Tong University. 30 p. [Accessed on: 07.10.2012]. Available at: [http://site.iugaza.edu.ps/walhabil/files/2010/02/Chapter\\_4.pdf](http://site.iugaza.edu.ps/walhabil/files/2010/02/Chapter_4.pdf)
- Williams, M. (1997). What is a cost? Management 122 (Cost Accounting). UCLA Anderson School of Management, 8 p. [Accessed on: 30.09.2012]. Available at: <http://www.anderson.ucla.edu/faculty/michael.williams/slide2.pdf>
- Williams, R. (1978). The cost audit: A tool for distribution management. International Journal of Retail & Distribution Management, 6 (2), pp. 53-57.



- Wood, W. R. (1993). Meaning and measurement of transportation costs. *International Journal of Physical Distribution & Logistics Management*, 14 (6), pp. 5-16.
- Worrall, L. (2002). Some thoughts on the research process in business and management. Occasional paper series. Wolverhampton Business School. Management Research Centre. 13 p. [Accessed on: 28.08.2012]. Available at: [http://www.wlv.ac.uk/PDF/uwbs\\_OP01\\_02\\_Worrall.pdf](http://www.wlv.ac.uk/PDF/uwbs_OP01_02_Worrall.pdf)
- Yamao, S., De Cieri, H., Hutchings K. (2009). Transferring subsidiary knowledge to global headquarters: Subsidiary senior executives' perceptions of the role of HR configurations in the development of knowledge stocks. *Human Resource Management*, 48 (4). pp. 531-554.
- Yin, R. K. (2008). *Case study research: Design and methods*. Fourth edition. SAGE Publications, 240 p.
- Zelinger, S. (2011). Mitigating risk and exposure from subsidiary operations. *Industry Week*. 4 p. [Accessed on: 28.08.2012]. Available at: [http://internalaudits.duke.edu/documents/articles\\_archive/MitigatingRiskandExposurefromSubsidiaryOperations11\\_4\\_11.pdf](http://internalaudits.duke.edu/documents/articles_archive/MitigatingRiskandExposurefromSubsidiaryOperations11_4_11.pdf)
- Zeng, A. Z., Rossetti, C. (2003). Developing a framework for evaluating the logistics costs in global sourcing processes: An implementation and insights. *International Journal of Physical Distribution & Logistics Management*, 33 (9), pp. 785-803.
- Zhang, N. S., He, W., Tan, P. S. (2008). Understanding local pharmaceutical supply chain visibility. *SIMTech technical reports*, 9 (4), pp. 234-239.

## **APPENDICIES (4 pieces)**

APPENDIX 1: INTERVIEWEES OF THE STUDY

APPENDIX 2: QUESTIONS FOR QUALITATIVE INTERVIEWS

APPENDIX 3: SUBSIDIARY'S ORDER-TO-DELIVERY PROCESS

APPENDIX 4: SUBSIDIARY'S IMPORT ORDER PROCESS

## APPENDIX 1: INTERVIEWEES OF THE STUDY

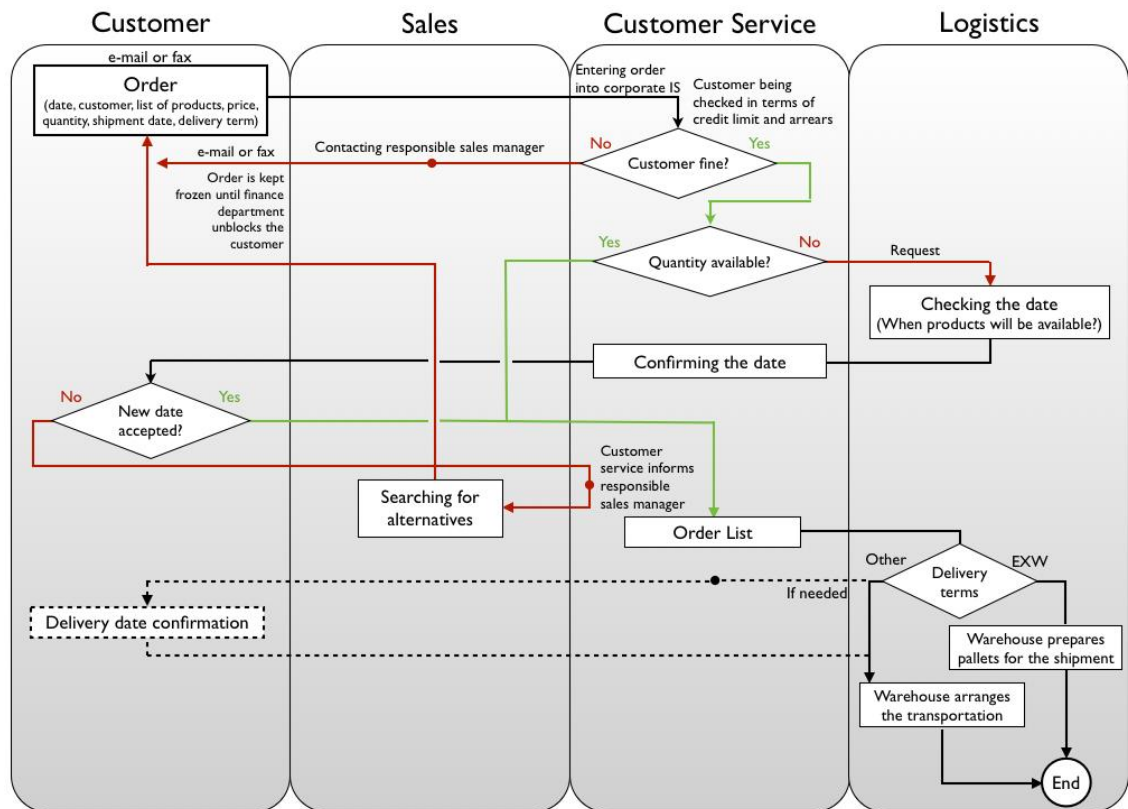
Date	Department	Title	Location
24.05.2012	Finance	Business decision support analytic	Saint-Petersburg
24.05.2012	Logistics	Warehouse foreman	Saint-Petersburg
24.05.2012	Logistics	Logistics specialist	Saint-Petersburg
24.05.2012	Finance	Financial controller	Saint-Petersburg
24.05.2012	Customer service	Head of customer service	Saint-Petersburg
24.05.2012	Customer service	Specialist of customer service	Saint-Petersburg
24.05.2012	Sales	Head of construction sales	Saint-Petersburg
29.05.2012	Logistics	Supply Chain Manager	Ramenskoye
29.05.2012	Logistics	Logistics leading specialist	Ramenskoye
29.05.2012	Logistics	Logistics specialist	Ramenskoye
29.05.2012	Logistics	Purchasing specialist	Ramenskoye
29.05.2012	Logistics	Customs specialist	Ramenskoye
29.05.2012	Production	Production supervisor	Ramenskoye
29.05.2012	Logistics	Warehouse foreman	Ramenskoye
30.05.2012	Logistics	Logistics specialist	Ramenskoye
30.05.2012	Sales	Sales director	Ramenskoye
30.05.2012	Logistics	Vice storage manager	Ramenskoye
31.05.2012	Logistics	Warehouse foreman	Kaluga
31.05.2012	Logistics	Logistics specialist	Kaluga
31.05.2012	Production	Production supervisor	Kaluga

## APPENDIX 2: QUESTIONS FOR QUALITATIVE INTERVIEWS

Department	Questions
Logistics	<ul style="list-style-type: none"> <li>• Occupation, duties and responsibilities?</li> <li>• How is the domestic transportation carried out? Who is involved in the process?</li> <li>• Who is responsible on the choice of LSP? What is this choice dependent on? Who negotiates the deals with LSPs? Who exactly orders the transport? Who is the main decision-maker regarding transportation? Is there some list of accepted suppliers? Are there contracts with LSPs?</li> <li>• What are the existing delivery terms? What are they dependent on?</li> <li>• Is the delivery accuracy being anyhow measured? If yes, what are the indicators and how are they calculated?</li> <li>• What are the main directions and destinations of distribution? What are the main distribution channels? How the low-volume deliveries are carried out? Is there any consolidation of freight? Are there any distribution centers used? Are trucks always full? What are the shares of full truckloads and less than full truckloads?</li> <li>• Are there specific procedures on order-to-delivery process and import order process? Where those can be found?</li> <li>• How is the order-to-delivery process carried out? What are the steps and who are responsible for them?</li> <li>• How the import orders are made and what is the import order procedure? Who is involved in the process?</li> <li>• How the transportation costs are measured, controlled and reported?</li> <li>• How does the warehouse function? What are the processes regarding warehouse management and who is responsible for what?</li> <li>• How the warehouse replenishment is conducted? Who is responsible?</li> <li>• Are there specific procedures on how to conduct warehouse management? Where those can be found?</li> <li>• How the transfers between the warehouses are made and who is responsible for them? Who makes the orders on transfers between the warehouses? How the products usually go? What are the main channels in terms of such transfers?</li> </ul>

Finance	<ul style="list-style-type: none"> <li>• Occupation, duties and responsibilities?</li> <li>• What could be the possible reasons why the sales freight expenses are so high? How are the transportation costs monitored and controlled? Is there somebody responsible for that?</li> <li>• Is there a way to get detailed information on transportation costs? Are those costs transparent? Are there any reports on transportation costs available and how can they be accessed?</li> <li>• How the corporate IS can be helpful to study the distribution and transportation?</li> </ul>
Customer service	<ul style="list-style-type: none"> <li>• Occupation, duties and responsibilities?</li> <li>• How is the customer order exactly being handled? What are the responsibilities of customer service? Who is doing what?</li> <li>• Who is agreeing the delivery terms? How the transportation is negotiated?</li> <li>• How are the urgent orders handled? What are the actions if some product is not available at the warehouse? How often does it happen?</li> </ul>
Sales	<ul style="list-style-type: none"> <li>• Occupation, duties and responsibilities?</li> <li>• Is there any specific sales policy that mentions how the transportation should be negotiated?</li> <li>• How are the delivery terms agreed? Are those inscribed into customer contracts? Where the contracts can be found?</li> <li>• How the transportation costs are taken into account on the sales level?</li> </ul>
Production	<ul style="list-style-type: none"> <li>• Occupation, duties and responsibilities?</li> <li>• How does the production function? Who is responsible for what?</li> <li>• What kinds of products are manufactured and how many different types? What are the product groups? How is the differentiation between Finnish and Russian products made?</li> <li>• What are the production capacities? How the capacity is utilized? Is there any seasonality? What are the outputs?</li> <li>• How are the finished products handled? Do they go straight to customers or are they kept in the warehouse? For how long do they usually stay in the warehouse?</li> <li>• Are there any specific requirements when it comes to transportation for different products?</li> </ul>

## APPENDIX 3: SUBSIDIARY'S ORDER-TO-DELIVERY PROCESS



## APPENDIX 4: SUBSIDIARY'S IMPORT ORDER PROCESS

